

The Local Self-Government Gazette.

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Ourselfes.

IN recent years, there has been a great outburst of interest in municipal work in this country in marked contrast with the indifference of an older period. In the past, public attention was more or less concentrated on provincial and imperial politics to the almost total neglect of questions nearer home. It was the fashion to regard municipal work as dry and petty, confined to small questions of street cleansing and lighting in which the intelligent citizen, ambitious of serving his country, could not profitably take any interest. To the young executive servants of the Crown, anxious to forward the interests of the population committed to their charge, the Municipal Councils too often, perhaps not without good reason, seemed rather an obstruction than a help. Opposition was apt to savour of faction, and the proceedings appeared unnecessarily verbose and unpractical. Having regard to previous history and training, such opinions were perhaps not altogether unjustifiable.

To the educated Indian of the previous generation, local self-government was a novelty. Government by a central authority he was accustomed to and could understand; he was familiar with an administration conducted by educated Europeans and Indians drawn

from a class habituated to the exercise of authority. To him the idea that an electorate composed mainly of the unlearned classes should elect persons to manage local affairs and that these persons should have powers independent of the central Government was novel. As for the executive officer of the Crown, if an Indian, he was drawn from the same class as that just mentioned. The European Member of the Service no doubt came from a different atmosphere, but he was caught into the service when still young and long before he could know anything of the practical working of the institutions of his own country.

These ideas are, however, being rapidly transformed. The popular indifference to municipal affairs is giving way in many places to a keen interest. The able men of the community do not now fight quite so shy of contesting seats at elections. It is being now recognized that it is a legitimate object of honourable ambition to serve one's own town and that the man who seeks to serve the country in a wider sphere on the provincial or imperial councils must establish his title to the choice by good work done on the local bodies. Slowly the truth is being realized that a man, however educated he may be, cannot be deemed a good citizen till he will rub shoulders with his poorer and less educated fellow citizens and attempt to make the corporate life happier and brighter. The executive officer for his part is discovering that government by discussion is gradually replacing government by authority and that in the new scheme of things he will play his part better by a sympathetic persuasion and a wise standing aloof (where necessary) than by a dictatorial manner and meddlesome interference. Government on their part are coming to realise that an honest difference of

opinion is a sign of healthy life rather than of faction and that municipal councils are better trained for self-government by giving them a reasonable liberty of action than by subjecting them to a multitude of petty and sometimes vexatious restrictions.

This transformation of the attitude of the respective parties, when completed, will, besides conducing to harmonious working, give local self-government a fair trial. Just as the best cure for a "sun-dried bureaucrat" is to put him in a position where he has to persuade the intelligent assent of a number of men accustomed to look at things from a different standpoint, so the best cure for a critical councillor is to put him in the chair of authority where he will find that it is easier to criticise than to govern and that he cannot get things done unless he is prepared to sacrifice logical finish to practical compromises. And Government by giving municipal councils a free scope in matters of taxation, administration and expenditure, will infuse that practical interest in their proceedings which is now lacking on account of the restrictions they labour under. Councils not infrequently get blamed at present for doing or not doing a lot of things for which acts of omission and commission, not they but other persons are responsible. Under a system of greater liberty, there may be greater mistakes and more chances of risky experiments, but it is far better that municipal councils should learn to stand on their own legs rather than eternally be in leading strings.

Much of the credit for this transformation is due to Government which, by its liberal money grants to local bodies for local improvements, has infused that practical interest in their work which was previously lacking. In

the happier era now dawning, both the citizen and the Government recognize that municipal problems are often as intricate as larger ones, and require special study and that a novice cannot make a successful municipal administrator. Municipal Government is an art, and like all arts, it requires a long period of preliminary preparation and apprenticeship. Local self-government requires its experts like any other branch of Government.

The object of the *Local Self-Government Gazette* is to take some small part in this process of equipping the citizen for the task of local self-government. And this it seeks to do, among other means, by giving popular instruction in ideas of citizenship, public health, sanitation, etc., by aiding and facilitating the work of the local bodies by creating and providing opportunities to them for gaining comparative knowledge and experience, by inviting discussion on municipal topics, by organising associations and conferences of heads of local bodies and by acquainting local bodies and citizens generally with their rights and duties with reference to municipal administration.

The *Gazette* will be practical, educative and such as will stimulate a more systematic, deeper and more detailed study than heretofore of questions connected with civic administration. It will be conducted on the lines of the high class English journals. Each number will consist of about 96 pages and will be divided into two parts. The first part will consist of articles on special subjects, descriptions of important schemes and projects undertaken by local bodies, legislative intelligence relating to bills introduced in the several Legislative Councils and questions asked in them and the answers given, comparative tables of statistics, prac-

tical points, important Government orders and official announcements, reviews of official and other publications, and miscellaneous information relating to municipal matters including extracts from other journals. The second part will consist of reports of important cases decided by judicial tribunals on questions relating to Local Self-Government. It is needless to state that local bodies and their officers should properly understand their rights and responsibilities and the view taken of them by the courts.

These, in brief, are our main objects and aims. Time and experience may render necessary some additions and alterations ; but that would be a mere matter of detail. After all, we doubt not that it would be readily conceded on all hands that Local Self-Government in this country has a future before it and, we venture to think, it is bound to be great. Even so, may we not hope that an organ devoted to it has an important and special function to perform and a great and worthy object to achieve ?



Cities and Town Planning Exhibition.

[By PROF. PATRICK GEDDES.]

IN consequence of the widespread interest awakened by the "Town Planning Conference and Exhibition" arranged in October, 1910, by the Royal Institute of British Architects in the Royal Academy Galleries, and of the desire expressed by various municipal and other bodies for the loan of the main contents of that exhibition, a Committee (chiefly recruited from those actually concerned with its preparation) was formed to select and organise a further "Cities and Town Planning Exhibition".

During the past four years this Exhibition has been held in Chelsea, Edinburgh, Dublin, Belfast, Ghent, and Dublin again, and its large and growing collections were on their way to India, to fulfil an arrangement for the present cool season with the Governments of Madras, Bombay and Bengal in their respective capitals, when sunk by the *Emden* in October.

Without delay, however, the renewal of the Exhibition was entered upon, and it is most gratifying to report that an "Emergency Committee", including leading town planners and architects, artists, collectors, and others interested, was also spontaneously and independently formed in London and in Edinburgh, with correspondents throughout the United Kingdom, in America and (as far as possible) upon the Continent. The principle of converting a reverse into a new advance has thus been followed, and it has been made practicable to hold an exhibition in at least two of the three capitals concerned within the season arranged for; no doubt upon a diminished scale, yet one sufficient to afford useful illustration of the main aspects of the civic and town planning movements.

At Ghent (International Exhibition, 1913) and Dublin (Civic Exhibition, 1914) the collections of the Cities and Town Planning Exhibition were arranged so as to illustrate

the many aspects of cities and city life, and these in their qualities, their defects and their improvement.

The geographical origins and conditions of cities were hence copiously illustrated, as also their historic development, from antiquity onwards, and with the interaction of environmental and historic changes and of other social factors, material and moral. Large space was given to the presentment of the varied effects of war. Modern developments—industrial and maritime, commercial and financial, imperial, military, etc.—were also illustrated, with their resultant hopes of town planning and of housing. A large gallery was devoted to the comparison of the great capitals, and to plans of leading cities showing improvements of metropolitan character. Still more extensive were the illustrations of recent advances upon a more moderate and more generally applicable scale, and of town planning improvements generally, *e.g.*, municipal and Governmental (public buildings, etc.), communications (docks, railways, new or improved thoroughfares, motor roads, etc.), sanitation (treatment of congested and deteriorated areas, etc.), housing in towns and in suburbs (with special attention to garden suburbs, garden villages, and garden cities) and other requirements (educational and æsthetic, moral and religious).

The vital interdependence and essential unity of all these many requirements and elements of a city have to be kept clearly in view by its planners. Hence these have been illustrated in the Exhibition and in various ways; in principle by graphic presentments of the varied functioning and aspects of any and every city, and in detail and application by means of a representative *Civic Survey of Edinburgh*, with surveys of other characteristic cities and towns, both great and small, but each realised as a living and continuous whole. The conception of the city (too commonly obscured by abstract speculation upon “the Individual” and “the State” and by the economic and political controversies to which such abstract views give rise) thus reappears with clearness.

The history of civilisation, its present phases, difficulties, and even struggles, are re-interpreted more clearly by the study of such a panoramic presentment of cities; their opening possibilities of revival, improvement, or even, where need be, reconstruction and renewal are made clearer also.

The present Exhibition in Madras, though far from completely reconstructed, will in various of these ways be found of service, and of educational value (in the widest sense, and for old as well as young); and it is hoped also of direct practical service in that arousal of citizenship and that corresponding advance of municipal efficiency which are now becoming so widely manifest—in India as well as in Europe and America.

But the Exhibition does not end with the study and comparison of cities throughout the world. It is above all useful for constructive purposes; and these are not only of wide and varied suggestiveness to each city which it visits, but of direct impulse upon specific problems, and even of direct bearing upon specific localities.

Moreover, beyond applications in detail, that better comprehension of a city as a living and growing whole which it expresses, leads on to suggest better town planning, and points even to city design—design upon those highest levels, alike in enhanced material success and in cultural effectiveness, towards which the situation and history, the present magnitude and resources, and the growing possibilities of Indian cities so plainly point, and towards which they need but to be combined.

In Dublin, for instance, during this past summer, the repair and brightening of the quarter in which the Civic Exhibition was held (not merely by municipal agencies, but largely by landlords and tenants together) was a first result of the Exhibition, and the extension of this throughout other quarters of the city has since been in progress. The existing

agencies for housing and town planning have been supported by public opinion and strengthened by active citizenship ; and the introduction of improved standards has thus been rendered possible, as regards both street improvement and suburban developments. Urban areas have been replanned in detail and the garden-village movement initiated. Nor has the monumental character of Dublin as a metropolitan city been forgotten, even up to provision for its Cathedral.

Beyond all these improvements, small and great, a comprehensive civic survey of the city has been initiated at once with Governmental aid and with varied individual co-operation. Materials have thus been brought together for the Exhibition, and also for the purposes of an International Competition, to be adjudicated upon in 1915, for the Town Planning of Greater Dublin.

How far practical outcomes such as these may be found suggestive in Madras and its surrounding towns and cities is at any rate not unworthy of consideration. The co-operation of public bodies concerned and of individuals interested in the development of their town, their Presidency, or of India generally, is accordingly invited towards the preparation of exhibits, by which the condition and the requirements of their city may be graphically presented and its possibilities set forth. The timely arousal of a wide-spread public interest is also eminently desirable, indeed necessary to its adequate success.



Madras City New Water Works.

[BY J. W. MADELEY, M.A., M.INST.C.E.,
SPECIAL ENGINEER, CORPORATION OF MADRAS.]

THE New Water Works which were inaugurated by His Excellency Lord Pentland, Governor of Madras, on 17th December, 1914 are the largest single works that have ever been carried out by the Madras Corporation. The total estimated cost, as originally given by me to the Corporation, was 62½ lakhs of rupees. The works have been constructed to replace the old unsatisfactory headworks, and to largely add to, and improve, the Distribution System, in order to provide all consumers in the city with an adequate and continuous supply of good drinking water throughout the day.

In planning out the scheme, it was necessary to take into account not only the needs of the present inhabitants, but also of the estimated future population 50 years hence, and it was therefore necessary to make a study of the probable growth in population.

The following table shows the increase in population as obtained from the Census returns:—

Date of Census.	Population of Madras City.	Increase in ten years.
1871	393,920	...
1881	398,777	4,857
1891	450,640	51,863
1901	509,346	58,706
1911	517,335	7,989

In determining future water-supply requirements of the city, it was necessary to take into consideration, not only the total population, but the population of each individual area, for it is obvious that the percentage increase to be expected in densely populated areas, such as Georgetown, is much less than the probable percentage increase in sparsely populated areas, such as Perambur.

The following table is interesting as showing the estimates of increase in population in different divisions during the next 50 years :—

Name of Division.	Population in 1911.	Estimated increase in 50 years.	Population in 1961.
Tondiarpet	75,936	23,514	99,500
Georgetown, West. ...	86,584	8,516	95,100
Georgetown, East.. ...	54,833	4,467	59,300
Perambur	24,981	27,619	52,600
Vepery	95,172	24,828	120,000
Nungambaukam ...	26,929	9,571	36,500
Triplicane	98,254	13,746	112,000
Mylapore	54,443	30,557	85,000
	517,182	142,665	660,000

The water-supply of Madras City is derived from the Korteliar River, across which, at a place called Tamarapakkam, is built a masonry weir, diverting the river—excepting the greater flood discharges—into a channel which feeds two storage tanks, known as the Cholavaram and Red Hills Tanks. From both of these, water is used to irrigate a first crop area of 7,500 square miles, and a second crop area of 3,200 square miles, the water thus used being estimated to amount to about three times the whole supply to Madras. The city derives its water direct from the lower, or Red Hills, tank, fed partly by rain falling on its own catchment area, but mainly from the Cholavaram tank into which the channel from the Korteliar River discharges. The catchment areas, aggregating 977 square miles, from which the Red Hills tank is supplied are :—

- (a) An area draining to the Korteliar River above Tamarapakkam anicut, 837 square miles,
- (b) An area draining to the Rivers Katankal and Boosikal, which deliver into the channel supplying Cholavaram tank, 106 square miles, and
- (c) The area draining direct to the Cholavaram and Red Hills tanks, 34 square miles. The storage capacity of these two tanks is, respectively, 579,000,000 cubic feet, and 2,162,000,000 cubic feet.

Towards the cost of construction of the works mentioned above, the Madras Corporation made no contribution, and their upkeep

and maintenance are in the hands of the Government Public Works Department. For water taken from the Red Hills tank for the supply of the city, the Corporation pays Re 1 per 1,000 cubic yards, or rather less than 1/10 anna per 1,000 gallons. To prevent contamination of the lake, however, by fishing, bathing, etc., the Corporation provides a patrol boat and staff of men. The same authority constructed the works required to convey the water from the storage lake to the city, and is solely responsible for their upkeep. The old works include a valve house situated at the south-east corner of the Red Hills tank, which contains the machinery for controlling the four valves, one on each of the four lines of pipe leading from the lake to the supply channel. This last has earth sides and bottom, is $6\frac{3}{4}$ miles long with a gradient of 3 inches per mile, and, for the most part, is carried upon an embankment. At the Madras end, the channel delivers its water into a masonry shaft, 22 feet in diameter, from which lead the cast iron mains of the city distribution system.

Very noteworthy among the faults of the old water-supply is the fact that for considerable periods, occurring usually every other year, the surface of the water in the Red Hills Lake is lowered below the take-off, with the result that—although there is still plenty of water in the tank—it is necessary to raise the water into the supply channel by pumping. An investigation into the effects of this pumping on the health of the city has shown that almost invariably, when pumping has been necessary, there has been a more or less violent epidemic of cholera. This synchronism is explained by three circumstances: (1) that the silt stirred up by pumping and carried into the supply channel predisposes to cholera, (2) that shortage of water causes the inhabitants to resort to polluted wells and tanks, and (3) that these events coincide with that period of the year most favourable to cholera. Other faults which have been frequently pointed out are that there are no filters, that the distribution system is defective, that there is a serious loss of water in transit due to evaporation and percolation through the channel banks, and that the supply channel cannot carry sufficient water to satisfy the increasing requirements of the city, is very liable to contamination, and is always threatened with the danger of being breached.

To remedy these faults, the following new works have been constructed :—

- (a) An intake tower situated at a point where the water of the lake is deep,
- (b) A new underground conduit to replace the old open channel,
- (c) Sand filters to purify the water,
- (d) Pure water tanks, in which to store the filtered water,
- (e) Pumps to import to the water an adequate pressure,
- (f) An elevated tank to ensure the maintenance of a steady pressure in the mains, and
- (g) The remodelling, alteration and extension of the distribution system so as to provide all the inhabitants of Madras with an adequate quantity of water under sufficient pressure.

The whole of these works (a) to (f) were completed by the end of 1914 except for the supply of filtering materials for five filters. The most important mains of the new distribution system, together with a large number of urgently required street pipes have been laid. The main object of the new works—the furnishing of a sufficient supply under adequate pressure—is now accomplished. The principal works, remaining to be done, are the completion of the subsidiary mains and distributary pipes, and the installation of waste water detection meters. These works are delayed owing to the decision of the Corporation to defer entering into contracts for large quantities of materials during the uncertainty which now prevails in consequence of the war.

The Intake Tower is situated about 110 feet from the face of the top of the Red Hills tank bund, to which it has been connected by means of a steel bridge. At different levels, inlets are provided with valves actuated by machinery situated inside the tower. By their means, the purest water—generally situated a little below the surface—can be drawn off, whatever the level of the lake may be. Thus, there is rendered available 1,110,000,000 cubic feet more water than could, under old conditions, be taken from the lake without pumping.

The two 24-inch pipes from the intake tower, after passing through the tank bund, terminate in a screening chamber, the supply to which is regulated by two automatic valves actuated by floats so as to close when the water rises above the level required to give the requisite flow through the conduit. The walls of this screening chamber are fitted with moveable copper gauze screens, 3-32-inch mesh, having a total area of 125 square feet, through which the water must pass in order to reach the roughing filter.

The water enters the filter at floor level, and passes vertically upwards through a filtering material consisting of broken stone supported on stone slabs themselves resting on brick piers, and then flows over a measuring weir into the conduit. A bye-pass is provided so that the water can be passed straight into the conduit without filtration, when the surface of the lake sinks below the level of the measuring weir. The roughing filter is a brick chamber 150 feet long, 108 feet wide and 8 feet deep, divided into two compartments governed by penstocks, so that one half may be thrown out of action for repairs or cleaning while the other half remains in use. Ordinarily, cleansing is effected by reversing the flow through the filter.

The conduit, which conveys the water from the roughing filter at Red Hills to the sand filters at Kilpauk, is a culvert 7 miles long with an average gradient of 1 in 4,470. Internally, it is 5 feet wide with vertical side walls 4 feet high to the springing of the arched roof, which has a rise of 18 inches. The floor is inverted with a dip in the centre of 3 inches, so that the maximum height is 5 feet 9 inches. The concrete floor averages 15 inches thick and is covered by a $4\frac{1}{2}$ -inch brick invert. The side walls are in brickwork 18 inches thick, and the arch consists of two rings of brickwork. The whole of the internal surfaces are coated with cement plaster (1 cement to 3 sand) $\frac{3}{4}$ -inch thick, and the outside of the arch is plastered with $\frac{3}{4}$ -inch of combination mortar.

There are in all fourteen filters of the ordinary slow sand type. The filters are arranged in two rows of seven each, it being intended that six filters of each row shall be continuously in operation, allowance being made for one filter in each seven being under repair or being cleaned. Provision has also been made for seven additional filters which will be constructed when required. The

conduit bringing the water from the Red Hills is continued round the fourteen filters and is connected to each bed by a 14-inch diameter cast-iron pipe controlled by a valve, so that any filter may be isolated for cleaning or repair. Between the two rows of filters runs the filtered water channel to which filtered water from each bed can be delivered through a Glenfield-Jones Automatic Outlet, designed to keep the rate of filtration constant. Each filter is 200 feet long and 100 feet wide, this being a convenient size for cleaning without throwing out too large a filter area at a time.

The filtered water flows through the filtered water conduit into three underground covered pure water tanks, each 150 feet square with a depth of 10 feet of water, having a capacity of 1,400,000 gallons each. The floors consist of 2 feet of concrete and the side walls are of brickwork, the roofs being supported on brick jack arches, springing from steel girders supported on brick cross walls, carried by arches springing from granite stone piers. Access to each tank is provided by means of manholes, and vent pipes are provided to allow the free ingress and egress of air, which is very necessary seeing that the water level will be constantly varying. Each tank is provided with a 30-inch inlet and 30-inch outlet, both fitted with sluicevalves, so that any tank may readily be isolated for cleaning or repairs without interfering with the working of the other tanks. A scour is also provided for each tank.

From the pure water tanks, the water gravitates to the suction culvert, whence it is pumped into the Corporation mains, an elevated tank being connected with the pumping main, in order to act as a balancing tank between the pumps and the distribution system.

In designing the pumping station buildings, an endeavour has been made to give them a pleasing appearance and much attention has been paid to a suitable style of architecture. The height of the chimney is 150 feet to ensure a good draft with Indian coal. Experience with other plants in Madras has led to the conclusion that higher chimneys are required in that city than in other places where the atmosphere is less humid and where a better quality of coal is obtainable.

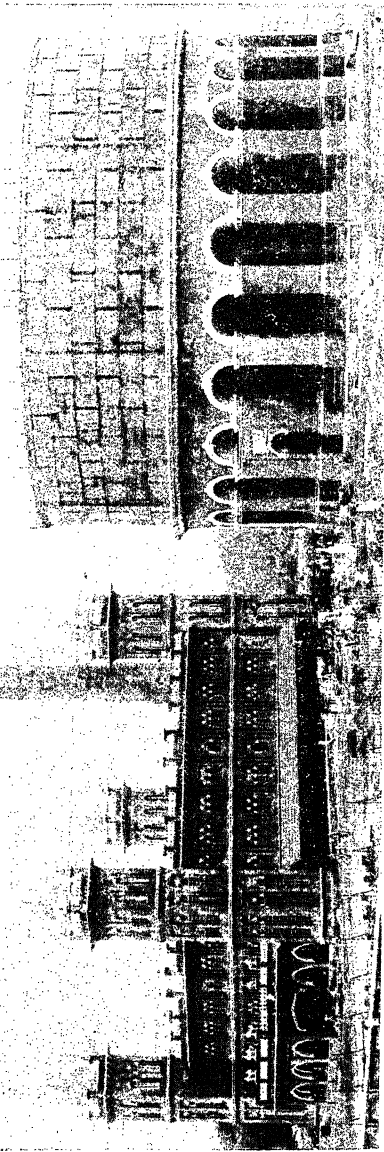
The pumping plant was supplied by Messrs. James Simpson & Co., of England and Calcutta. It comprises three high duty Worthington direct acting engines, each capable of delivering 12,000 gallons of water per minute against a maximum total head of 80 feet. Three Babcock and Wilcox Boilers are provided, each capable of supplying steam continuously to any two engines working together against the maximum head. The machinery is so arranged that any two engines can be worked from any two boilers, and that any group of engines and boilers may be worked together, and also that any engine or boiler may be cleaned or repaired without interfering with the working of the other engines and boilers. The guaranteed consumption is 1.75 lbs. of Bengal coal per pump horse-power hour, which is an extremely low figure. The boilers are provided with automatic chain grate stokers having an area of 36 square feet.

A venturi meter is inserted on the 48-inch pumping main and is arranged for a maximum registration of 1,800,000 and a minimum registration of 120,000 gallons per hour. A combined recorder is used to show by diagram the rate of flow at any moment and by counter the total quantity passed. A water level and pump pressure recorder are also provided, so that complete records are available for calculating the work done by the plant.

The elevated tank is provided to maintain a balance between the demand and supply of water to the distributary system. This tank is constructed of steel, circular in plan, 104 feet in diameter and 28 feet deep from overflow level to the flat bottom. It has a capacity of $1\frac{1}{2}$ million gallons. In order to maintain an adequate pressure all over the city, the tank has been designed with its bottom 37 feet and the top of roof 73 feet above ground level. An overflow is provided consisting of a pipe 36 inches in diameter, situated at the centre of the tank and arranged in such a manner as to act as a support for the steel roof, as well as serve its proper purpose of providing an escape for any water that may be pumped into the tank in excess of its holding capacity.

The tank is supported by an external ring of brick piers and arches, while steel stanchions surrounded with concrete are used for the central supports in order to minimise the weight which, if only brick supports were used, would be greater than the safe limiting pressure on which the foundations rest. The steel floor of the tank rests upon steel beams supported by piers and arches.

MADRAS CITY NEW WATER-WORKS: THE PUMPING STATION & ELEVATED TANK.



On the left is seen the Pumping Station in which are housed three pumping engines, each capable of delivering 12,000 gallons of water per minute against a head of 80 feet. The pumps are of the

High Duty Worthington Direct Acting type and are exceedingly economical in working.

On the right is seen the Elevated Steel Tank resting on a ring of masonry piers and arches. The tank is circular, 104 ft. in diameter and 28 ft. deep. It has a capacity of $1\frac{1}{2}$ million gallons. The total weight of the tank when full of water is about 17,000 tons.

A principle followed in the design of this tank has been to leave exposed as little metal work as possible. Thus not only the stanchions but also the floor beams are encased in concrete, the upper surfaces of these casings constitute the actual supporting floor of the tank, in the form of long flat tablings separated by channels. The floor plates of the tank were arranged in such a manner that their longitudinal joints should come over the centres of the concrete channels, to enable the work to be riveted up with ease. As a protection against corrosion, the bottom of the tank itself is coated with 1 inch of cement plaster.

The additions and improvements to the distribution system have been designed to ensure the fulfilment of the following essential requirements :—

- (1) The supply of all consumers with an adequate quantity of water continuously throughout the day.
- (2) The maintenance of a sufficient pressure throughout the distribution system.
- (3) Perfect and rapid circulation of water throughout the entire system.
- (4) Reasonable protection against fire.
- (5) Means of detecting and stopping waste in a systematic manner.

The old system was defective in all these respects. That these faults should exist is not to be wondered at, for the old system was laid out some forty years ago, and since then the population of Madras city has increased by 120,000. To supply this greatly-increased population, a large number of small distribution pipes have been laid, and the consumption has increased to so great an extent that the leading mains are quite incapable of supplying sufficient water to feed the greatly-increased number of small distributaries. The method of procedure adopted in preparing the design for reinforcing the old system was to ascertain what quantity of water is required for different parts of the city, what the old system is capable of supplying, and then to determine what additions and alterations were needed to make efficient the old inadequate system.

The first step in planning the distribution system was to ascertain as precisely as possible the population to be supplied in the different districts of the city. In considering this question, it was important to decide what future increase in population should be provided for, or, in other words, to what extent the capacity of the pipes should be enlarged, in order to meet future increased demands without laying an undue burden of cost upon the tax-payers. It was anticipated that such loans as were required to defray the cost of this work would be subject to repayment over a period of from 30 to 50 years according to the nature of the works, and thus it was considered that the distributary system should be sufficient for the needs of the consumers at the expiration of that period. The pipe system was therefore designed so as to suffice for all parts of the city up to 1961.

The average daily consumption has been taken as 25 gallons per head per day. This is the quantity recommended by the Committee appointed by Government in 1890, and has formed the basis for the design of the water works. Judging by the consumption in Bombay and Calcutta, 25 gallons per head per day is certainly not too high, and, if there is not to be a scarcity, every precaution must be taken to prevent waste and misuse. The quantity of water available from existing sources, as estimated by me from a careful study of all available statistics, is 35 gallons of water per head per day for a population of 660,000, provided all irrigation supplies were stopped; but, as in the absence of exact measurement, this estimate had to be based largely on hypothesis, it is not advisable to count on an available supply of more than 25 gallons per head per day, until measured flows have proved it safe to estimate on a larger quantity.

The minimum pressure maintained in mofussil towns in the Madras Presidency is understood to be 10 feet. This is exceedingly low, compared with the usual practice in Europe and America, where the least pressure is usually about 50 to 80 feet. In Bombay, the lowest pressure in any district is 50 feet, and in many districts it is between 100 and 150 feet. Calcutta has recently completed a scheme costing some thirty lakhs of rupees to ensure a pressure of at least 40 feet at all times in every part of the city. In these circumstances, I decided that the minimum pressure in Madras at the average rate of supply of 25 gallons per

head per day should be about 50 feet above ground level at the ends of principal mains, and the additions and alterations to the old system have been worked out to ensure this pressure.

The smallest new pipe is 4 inches in diameter. This is the least which should be allowed in the distribution system, but owing to the expense of replacing all the old 3-inch pipes by 4-inch, it was decided to leave in the 3-inch pipes wherever they were not too small to supply domestic requirements. At the same time whenever 3-inch pipes are taken up for cleaning or other purposes, they are replaced by pipes at least 4 inches in diameter, for 3-inch pipes very quickly become choked with rust and sediment, and require frequent cleaning; they are also quite inadequate for fire-extinguishing purposes. All pipes less than 3 inches in diameter are being taken up and replaced by pipes at least 4 inches in diameter.

Connections are allowed only to pucca houses which are assessed at or above a value settled by the Standing Committee. Mud huts and other poor class dwellings are supplied by means of public fountains. Two classes of connections, are allowed, namely, "first class" and "second class". The second class which is to apply to the bulk of the population, will enable a householder to have his own taps, *provided they are placed in such positions that they can at all times be inspected by the Municipal staff*. Usually, such taps would be immediately in front of the house, or in the verandah, and can, by simple arrangement of an iron wire gauze faced box, capable of being locked, be absolutely protected by the owner. Anyone desirous of having a supply which is not open to inspection will have to pay for a first-class service, subject to the following conditions:—

- (1) The householder is required to hire water meters placed at his disposal by the Corporation, to adopt specified fittings, and to secure approval of the position of pipes and taps.
- (2) He obtains a free supply of 163 gallons per month for every rupee of rent, with a minimum free allowance of 3,000 gallons per month.
- (3) A charge of 12 annas per 1,000 gallons is made for all water used in excess of the free supply.

THE LOCAL SELF-GOVERNMENT GAZETTE.

It is believed that by the adoption of this method of house service, everyone in the city can have all the water which he legitimately requires, and that, at the same time, it tends to reduce waste to a minimum.

The following is a summary of the length of pipes included in the new distribution system, excluding the proposed new 18-inch steel main, which, with its connections to old mains, has a total length of 3,230 feet :—

	Miles.
Old pipes, 1½ to 42 inches	172
Pipes to be removed, 1½ to 18 inches, mostly 3-inches and under	61
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Balance of old pipes to be retained	111
Pipes to be relaid, 4 to 18 inches	4
New pipes to be laid, 4 to 42 inches	130
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Total length in complete system	245
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With a distribution system of this great magnitude, the waste will be enormous, unless every possible precaution is taken to minimise it. This waste prevention is a most important matter, and the Corporation of Madras have had it under consideration on a number of occasions. So important is it that I hope to devote a separate article to it at an early date.



Audit of the Accounts of Local Bodies.

IN creating separate autonomous units of Local Self-Government, one of the most important points which the legislature in India has always taken care to provide is that while the local body to which the administration of a local institution is entrusted, is vested with certain specified powers in order to enable it to perform its duties, a general power of control is always reserved to Government and its administrative officers; and the administration of the local body is subjected to a periodical review by Government. The exercise of its powers and the performance of its duties by a local body necessitate the maintenance of proper accounts by the executive. These accounts not only enable the local body to regulate its administration but are helpful to the Local Government in the exercise of proper control over it. Inseparable from the maintenance of proper accounts is the necessity for their audit.

Audit is the hand-maid of administration. Its utility consists not only in helping the administration by bringing to light irregularities on the part of the executive in administering the finances of the institution but also in securing completeness and accuracy of the accounts and in the presentation in a simple form of the financial results of the administration.

Every Act of Legislature in India relating to Municipal Corporations and District Municipalities, therefore, contains provisions regarding the appointment of auditors and their duties. In all these Acts, with the exception of the Bombay City Municipal Act, the power of appointing auditors has been reserved to Government. It is only in the Bombay Municipal Act III of 1888 that this power has been vested in the Corporation itself. The provisions of the Bombay City Municipal Act III of 1888 in regard to the appointment of auditors, their powers and duties are as follows :—

SECTION 136. (1) The Municipal accounts shall also be examined and audited from week to week by auditors specially appointed in this behalf for each official year by the Corporation.

(2) The auditors so appointed may--

(a) by summons in writing, require the production before them of any book, deed, contract, account, voucher or other document or paper necessary for the proper conduct of their audit;

(b) by summons, in writing, require any person having the custody or control of, or accountable for, any such book, deed, contract, account, voucher or other document or paper to appear in person before them;

(c) require any person so appearing before them to make and sign a declaration with respect to such book, deed, contract, account, voucher or other document or paper.

[DEFAULT : Fine of Rs. 100. (Section 471, Item 1.)]

(3) The auditors so appointed shall receive reasonable remuneration, not exceeding, in the whole, Rs. 10,000 per annum, as the Corporation shall from time to time determine.

SECTION 137. (1) The auditors so appointed shall forthwith report to the Standing Committee any material impropriety or irregularity which they may at any time observe in the expenditure or in the recovery of moneys due to the Corporation or in the Municipal accounts.

The powers and duties of the auditors as defined in the Madras City Municipal Act III of 1904 and the Calcutta City Municipal Act III of 1899 are more or less the same. But while the former provides for the appointment of two auditors by the Local Government, no mention is made in the latter of the number of auditors, though their appointment is the special concern of the Local Government. The provisions of the two Acts are as follows :—

MADRAS CITY MUNICIPAL ACT III OF 1904, SECTION 110.

The Local Government shall before the end of every financial year appoint two persons to be auditors of the Municipal accounts who shall maintain and keep a continuous audit of the same during the financial year next following; and the President shall submit these accounts to the auditors as required.

SECTION 111. The auditors appointed under the last preceding section may—

(a) by summons, in writing, require the production of any document, the perusal or examination of which they believe necessary for the elucidation of the Municipal accounts;

(b) by summons, in writing, require any person having the custody or control of any such document, or accountable for the same, to appear in person before them; and

(c) require any person so appearing before them to make and sign a declaration with respect to such document or to answer any question or to prepare and furnish any statement relating thereto.

[DEFAULT: Fine of Rs. 100. Schedule XVI.]

SECTION 112. The auditors shall—

(a) report to the Standing Committee any material impropriety or irregularity which they may observe in the expenditure, or in the recovery of moneys due to the Corporation or in the Municipal accounts;

(b) furnish to the Standing Committee such information as the said Committee may require concerning the progress of their audit; and

(c) submit to the Standing Committee a final statement of the audit and a duplicate copy thereof to the Local

Government within a period of three months from the end of the financial year, or within such other period as the Local Government may notify.

CALCUTTA CITY MUNICIPAL ACT III OF 1899. SECTION 143. (1). The Municipal accounts shall be examined and audited from time to time by auditors specially appointed in this behalf by the Local Government.

(2) The auditors so appointed may—

(a) by written summons, require the production before them of any document which they may consider necessary for the proper conduct of their audit ;

(b) by written summons, require any person having the custody or control of, or accountable for, any such document to appear in person before them, and

(c) require any person so appearing before them to make and sign a declaration with respect to such document or to answer any question or prepare and submit any statement.

[DEFAULT: Fine of Rs. 100 . (Section 574.)]

(3) The General Committee shall from time to time pay to the Local Government from the Municipal funds such sums as may be fixed by the Local Government to cover the cost of the audit, not exceeding the actual cost as declared by the Local Government.

SECTION 144. The auditors so appointed shall—

(a) report to the General Committee any material impropriety or irregularity which they may observe in the expenditure, or in the recovery of moneys due to the Corporation or in the Municipal accounts,

(b) furnish to the General Committee such information as the said Committee may from time to time require concerning the progress of their audit, and

(c) as soon as may be after the completion of their audit, deliver to the General Committee a report upon the Municipal accounts.

SECTION 145. The Chairman shall cause the report mentioned in Section 144, clause (c) to be printed and shall forward a printed copy thereof to each Commissioner along with the papers mentioned in Section 17 (Administration Report) sub-section (3), and shall bring such report before the Corporation for consideration at their next meeting.

SECTION 146. It shall be the duty of the General Committee forthwith to remedy any defects or irregularities that may be pointed out by the auditors, and to report the same to the Corporation.

As regards District Municipalities, the Acts for the several provinces provide for the framing of rules by the Local Government as to the accounts to be kept by the Municipal Councils and as to the manner in which such accounts are to be audited and published. The Punjab Municipal Act III of 1884 further provides for the framing of rules by the Local Government as to the conditions on which the accounts of the Municipalities are to be open to inspection by inhabitants paying any tax under the Act. The Bengal District Municipalities Act III of 1884 contains the following further provision :—

SECTION 82 (2) (as amended by Act IV of 1894).—The Municipal accounts shall be audited each year in such manner as the Local Government may direct: Provided that if the Officer appointed to make the yearly audit in any Municipality shall report that the accounts are in such a confusion that the financial position of the Municipality cannot readily be ascertained, the Local Government may, by an order in writing, require the Commissioners to submit within a time and to a person specified in such order, the accounts duly adjusted; and if the Commissioners failed to comply with such order, the Local Government may appoint a special officer to examine and report upon the accounts, and shall fix

the salary of such special officer which salary shall be paid from the Municipal Fund unless the Local Government shall otherwise direct.

Under the powers vested in them by the Madras District Municipalities Act IV of 1884 as amended by Act III of 1887 and Act I of 1889, the Madras Government have published a Municipal Account Code which contains elaborate rules for the administration of the Municipal funds and the accounts to be maintained by the Municipal Councils.

Up to 1907, Municipal Corporations and District Municipalities were required to defray the cost of audit out of their own funds. But since 1908, the accounts have been audited by the Government Accounts Department, and these Local Bodies have been exempted from any liability for the cost of audit which is now entirely borne by the Provincial Revenues, the latter being compensated by an assignment from Imperial funds.

The audit of the accounts of a Local Body consists mainly of a check of its revenue and expenditure and the examination of the records in regard to the assessment of taxes and other dues and their realization, attention being directed to the following broad principles, which govern the system of Government audit generally:—

(1) Whether the general financial position of the local body is sound and whether its assets are sufficient to meet its liabilities,

(2) Whether the assessment of taxes and other dues are proper and consistent with the provisions of the Act,

(3) Whether proper means are employed to watch the necessity of making supplemental assessments,

(4) Whether the taxes and other dues are collected promptly and whether such collections are remitted promptly to the local treasury or Presidency Bank with which Municipal Councils and Corporations are required to bank,

(5) Whether proper precautions are taken to prevent embezzlements, serious loss of revenue and wasteful expenditure,

(6) Whether there has been any special negligence in the observance of rules, in carrying out any special orders of Government and in removing irregularities brought to notice by the auditors, and

(7) Whether the expenditure incurred is legitimate and is supported by proper vouchers and whether in cases in which separate capital and revenue accounts are kept, the allocation of receipts and payments between Revenue and Capital is proper and whether money raised by loans is spent on objects of permanent benefit to the locality.

The revenues of a Local Body may be divided into the following four main classes for purposes of check :—

(a) Revenue having a fixed demand, that is, taxes, fees, etc., the demand for which is fixed beforehand in accordance with the provisions of the Act and for which bills are issued, such as house-tax, private scavenging fees, warrant fees, taxes on vehicles, animals, etc.,

(b) Revenues leased out,

(c) Revenues collected departmentally,

(d) Fluctuating items of revenue.

The audit of receipts chiefly comprises the following processes :—

(1) That the taxes and dues have been assessed properly and in conformity with the provisions of the Act.

(2) Check of collections,

(3) Verification and examination of the outstanding items of revenue,

(4) Verification and examination of remissions and writes off of revenue,

(5) Verification of the demand, collection and balance,

(6) Examination of the demand and collection of revenue managed departmentally, of revenues leased out and of fluctuating items of revenue, *i.e.*, for which no previous assessment can be made,

(7) Verification of the cash balance shown in the cash book with that acknowledged by the treasury or Bank with which it banks.

In regard to expenditure, it is seen that every payment is supported by a voucher in proper form, that the expenditure incurred is necessary, is permissible under the Act, is not greater than the occasion demands, is not opposed to any orders of Government, special or general, and has been provided for either in the budget estimates of the year or by a subsequent allotment of funds, that the Municipal Councils have not exceeded their powers in sanctioning allotments and transfers, that payment has, as a fact, been made on a voucher in proper form and to the proper person and that it has been so acknowledged and recorded as to render a second claim against the Municipality on the same account impossible; that the vouchers have been correctly prepared in accordance with the rules and have been duly passed for payment by the Chairman of the Municipality or other person duly authorised by the Corporation, Council or Committee in that behalf and that in any case, they have been passed by the Council or Corporation at some stage before or after payment. A detailed check is also applied to the receipts and payments in respect of deposits, advances, provident funds, investments, loans, sinking funds, water and drainage tax fund and other miscellaneous special and stock accounts. Finally, a statement showing the annual receipts and charges is prepared and its correctness certified to.

The question whether official or non-official agency is better suited for the audit of institutions under the administration of a local body has often been discussed. Up to 1887,

the audit of the accounts of the Corporation of Madras and the District Municipalities in the Presidency was the concern of non-official agency. Such an audit was found inefficient and the agency was found unequal to the task. Probably the outstanding feature in their system was a want of consistency following the idiosyncracies of the local audit experts. Audit by official agency under the supervision of the Accountant-General was accordingly substituted in 1888. The following considerations weighed in favour of and precipitated the change, and apply with greater force owing to the policy of continued decentralization and enhancement of the powers of the local bodies :—

(1) Non-official agency being employed by the local bodies themselves lacked the important feature of independence ;

(2) There could be no uniformity in the character of audit by such agency ;

(3) Such agency could not be guided by definite rules in regard to audit procedure nor was there any possibility of framing any set of general rules for their guidance ;

(4) The work of non-official auditors could not have the benefit of supervision by such highly trained officers as the Examiner of Local Fund Accounts working under the ægis of the Accountant-General. The accounts of local bodies being maintained after the Government system of accounts, non-official auditors not being generally trained in that system would be found lacking in that thorough and up-to-dateness as the official agency which is recruited and trained specially for the purpose and whose knowledge and experience are not confined to the restricted area covered by the audit of Municipal accounts but extend to the varied and complicated processes of audit to which the accounts of Government and of various other institutions under the audit control of the Accountant-General are subjected. Audit by Government

agency is thoroughly independent in its character and the degree of efficiency is naturally far greater. The audit is performed by a set of well-trained and experienced auditors holding a responsible position, drawing a fairly good salary and having, as members of the Accountant-General's general establishment, very good prospects of rising to higher position. Independence is thus assured, for their advancement depends not on the patronage of local officials but on the opinion of the Accountant-General, the best pass-port for their promotion being the efficient performance of their duties. These auditors are under the direct control of the Accountant-General and the latter is, in regard to audit matters, independent of even the Local Government. The independence of official audit is accordingly as thorough as it could possibly be. This arrangement further assures the local bodies of the ready assistance of the Accountant-General as a financial adviser who further prescribes the system of accounts. The local bodies are in constant correspondence with him on doubtful points of rules and procedure and receive his advice freely. A consistent watch over the regular and punctual closing of the accounts by the local bodies and periodical inspections conducted under his supervision by an experienced officer of the Finance Department constitute a no less important function of the Accountant-General in these directions. The staff of auditors is posted up in all the detailed rules and is also so thoroughly conversant and familiar with the practical uses of the various forms, that they are able to conduct the audits with the greatest facility and much of the time which would be wasted by a non-official auditor in having to grasp the system of accounts and procedure is now directed by his official compatriot to the application of the more important and necessary principles of audit. It is thus clear that audit by official agency is far more suitable and cheaper than that by non-official agency.

Another requirement which is indispensable in the case of audit is that the work should be very expeditiously performed, for, it must be conceded that, were the presentation

of the accounts materially delayed in consequence of deferred or protracted audit, much inconvenience would result; while the value of the criticism of the accounts would be greatly deteriorated if it could not be made soon after the closure of the accounts. The audit of the accounts of the Madras and other Presidency Corporations is accordingly carried on concurrently, *i.e.*, from day to day. Such a concurrent system can hardly be necessary for District Municipalities besides proving too costly. Their accounts are therefore at present audited half-yearly in the Madras Presidency and this arrangement has been found to work satisfactorily. The results of the audit are communicated to the Chairman concerned as soon as possible after the completion of the audit. After the close of the year, the Accountant-General also submits to Government a general review of the audit of the accounts of all the District Municipalities in the Presidency, and a separate review for the Corporation of Madras.



Voluntary Efforts in the Cause of Rural Sanitation.

[BY THE HON'BLE RAO BAHADUR M. RAMACHANDRA RAO.]

I AM indebted to the Editors of this Journal for their invitation for an expression of opinion on the recent orders of the Government inviting the Presidents of the District Boards to report in what way voluntary action on the part of people in the cause of sanitation can be encouraged (*Vide* G. O. 1088-L., dated 30-6-1914). At one time it was an article of faith with the sanitary authorities in this country that the people dislike or are opposed to all better methods of sanitation, that it is not possible in a custom-ridden country to change the habits of the people and that all attempts at introducing better sanitary arrangements are doomed for failure. It is therefore a matter for satisfaction that a change has come over this frame of mind of the authorities.

In his Administration Report for 1913, the Sanitary Commissioner states that there is an evident desire among the people for better and improved sanitary conditions and that this desire has manifested itself in various ways, as for instance, in the formation of Sanitary Associations and the levying and administration of fees obtained as purely private contributions for conservancy purposes and improving water supplies and setting aside sites away from villages for latrine purposes and for the storage of manure so as to prevent fouling of the surroundings of the villages by indiscriminate defæcation and the nuisance and danger arising from the prevalence of flies. He expresses the opinion that these voluntary efforts are worthy of encouragement and should be fostered and aided. In the concluding portion of a note on recent sanitary developments in this Presidency published a few days ago, the Government of Madras review the sanitary progress of recent years and have also expressed an opinion that progress

was possible only through an increasing measure of popular co-operation and voluntary aid which has met the Government on all sides and of which many instances could be given. It will thus be seen that it is now recognised that those examples of voluntary effort in the cause of sanitation afford evidence that the people are anxious for an advance in the direction of better sanitation and the Government are anxious to encourage these voluntary efforts.

In the first place, before any voluntary efforts can find free play on the part of the people, there are very many sanitary evils which have been inflicted on the people by the action of Government which require attention, at least in some districts of this Presidency. In the irrigated districts, it is almost impossible by any voluntary action on the part of the village community or of individuals to bring about a better state of things. I venture to invite the attention of your readers to a paper presented by me to the third All India Sanitary Conference held at Lucknow in 1914 on Drainage and Sanitation in rural areas in the Madras Presidency. It will be seen therefrom to what extent the past policy of Government has resulted in the introduction of the sanitary evils without the removal of which it is impossible to make any headway.

I feel therefore certain that voluntary efforts by the people will not result in any good in areas irrigated under the major system of irrigation, where the existing sanitary evils which are the direct result of introduction of large volumes of water into large tracts of the country without the proper perception of the sanitary needs of villages cannot be removed by any voluntary action of the people. They are too complicated and serious and are altogether outside the scope of voluntary efforts of the people living in these areas. Apart from these initial difficulties in some of the districts in this Presidency, there is also the important question of organisation for sanitary work. The upkeep of the sanitary condition of the villages would require continuous and unremitting

attention and expenditure. There is no organisation in the villages to undertake this work and to stimulate matters. The Decentralization Commission have stated that an attempt to force rural sanitation from above has hitherto failed and have suggested the formation of village *panchayats* to keep their villages clean in their own way, and they have recommended that the expenditure for minor sanitary works, such as wells and drinking-water tanks, the cleansing of the village and upkeep of the village roads, should be entrusted to those panchayats. The Government have not hitherto faced the question of the formation of village panchayats. I do not believe any appreciable progress will be possible unless village organisation on some suitable basis is revived. On the other hand, the Government have consented to co-operative panchayats undertaking sanitary work in the villages. Mr. Devadhar of the Servants of India Society, Poona, has pointed out at a meeting of the Provincial Co-operative Conference recently held at Madras, the danger of entrusting these extraneous duties to co-operative societies. It seems herefore necessary that instead of wasting a great deal of energy and time in finding out how voluntary effort can be encouraged, village organisations such as that suggested by the Decentralization Commission and the All India Sanitary Conference should be brought into existence immediately. This will be the best means for stimulating local voluntary effort in the cause of sanitation.

It has been suggested for some time that a fixed proportion, however small it may be, of the local funds contributed by each village should be ear-marked for expenditure in the village itself. I believe this will be a step in the right direction. Where villagers feel and see that some of the moneys contributed by them as local cess is being spent in their own villages and near their own homes and by themselves, they will naturally take more interest in the sanitary affairs and are likely to augment the funds by voluntary contributions. In some of the other provinces, such as Bombay and the United Provinces, a village sanitation Act

has been in force for some years. Above all, it must be recognised that a great deal of propagandistic work in the villages is necessary if an advance is to be secured. Sanitary regulations impose a certain amount of restraint on the liberty of action of the individual, and voluntary effort in the cause of sanitation will only be successful so long as it does not seriously interfere with the individual convenience. It is quite possible and even easy to secure a certain amount of co-operation for digging a well, for cleansing a village tank and for similar purposes, but it is bound to fail if it be taken further unless the sanitary conscience of the community is itself ready to cheerfully agree to these restrictions. I therefore think that a great deal of popular education in sanitary matters must precede all efforts at improvement.



The War and Local Bodies.

THE mere fact that a state of war exists between England and a foreign state has no effect whatsoever upon a contract entered into between a local authority and a person or firm who is not a subject of that state. The contractor cannot, therefore, refuse to supply the goods at the contract price, if such goods are still obtainable by him although at an increased cost. If the goods agreed to be delivered are now, in fact, unobtainable on account of the war, the contractor would be excused delivery on the ground of impossibility of performance. Section 56 of the Indian Contract Act, which provides that a contract to do an act, which, after the contract is made, becomes impossible, or, by reason of some event which the promisor could not prevent, unlawful, becomes void when the act becomes impossible or unlawful, would then apply. So long as the contract does not become impossible of performance or unlawful, it is binding and enforceable. This is the legal position. The war, however, has caused an enormous increase in the prices of goods, materials, etc. and if the contracts are to be strictly enforced, the result will probably be that most contractors will be totally ruined. The contractors are therefore entitled in equity to reasonable concessions. In England, a position of considerable uncertainty seems to prevail amongst local authorities as to the natural obligations of themselves and their contractors in cases in which the latter are asking for concessions, in view of the increase that the war has caused in the prices of goods, materials, etc.

The Local Government Board, having been consulted on this matter by various local authorities, has stated generally that in its view the war does not affect the liability of contractors under contract with local authorities, but there may be cases in which the circumstances of a particular contract would have to be considered in order to determine the legal position. The Board is of opinion that in any case in which contractors represent to local authorities that they cannot continue to supply goods, materials, etc., at contract price, the local authorities should endeavour to arrange

with the contractors to continue the supply on the understanding that, whilst the contracts will form a basis for arrangement as to the prices to be paid, the local authority will be willing to settle the actual amounts at a subsequent date either by agreement or by arbitration. The Board further states that it cannot give any sanction which would have the effect of withdrawing from the district auditor's review at the audit any payments made by a council in excess of contract prices and charged in its accounts. Under the special circumstances, however, the Board's sanction might be assumed if the auditor had evidence before him which satisfied him that the additional payments were reasonable.

As regards entering into new contracts by local bodies, during the continuance of the war, the *Municipal Journal* writes :—

When the war commenced, there was an immediate rise in the prices of certain materials and articles that are in constant demand with local authorities, and many firms were anxious to revise the terms of their contracts. On the whole, these firms were met fairly and in a business like way by our municipal bodies, and their claims are being or will be equitably adjusted. Now that a great many contracts are on the point of completion, municipal councillors and officers are faced with another and more difficult problem. Should fresh contracts be made, and if they should, for what period? In the first place, it is considered undesirable in many cases to make long period contracts at present prices. The war may be long or it may be short, but there is nothing so certain as that prices will rule high during its progress. On the other hand, peripatetic buying on a rising market is not likely to be a satisfactory expedient from the point of view either of the councillor or the officer. The most general disposition appears to be to invite tenders for shorter periods than usual, and to substitute for the twelve months' contract an arrangement covering, say, a period of three months only. If this procedure is adopted, advantage can be taken of the changes in the situation that may develop during the progress of the war; and the competition is likely to be greater than it would be for contracts extending over longer periods. As showing the uncertainties of the present situation, we may mention that the Liverpool Health Committee a few days ago considered the case of the workshops for the Blind which supply the Corporation

brushes. The cost of material, as it appears, has gone up very considerably, and in some cases by as much as 100 per cent, and the Secretary of the institution wrote that the contract could not be fulfilled except at a "damaging loss." The Committee has decided to request that all contracts be carried out, and has promised that at the end of the period it will give favourable consideration to any application for an allowance in respect of additional expense due to the war.



Notes.

KURNOOL DRAINAGE.—The preliminary investigation of the drainage scheme for the Kurnool Municipality is shortly to be commenced.

CHIDAMBARAM WATER-SUPPLY.—The Chidambaram Water-works are nearing completion, and it is expected that they will be formally opened by H. E. Lord Pentland on the 23rd February. We hope to publish a description of the works in our next issue.

RANGOON MUNICIPAL BILL.—The draft Municipal Bill for Rangoon is still under the consideration of the Special Sub-Committee appointed for the purpose.

FOOT PASSENGER TOLL.—The District Board of Tanjore has decided to levy a foot-passenger toll of one pie each for raising a sinking fund to cover the cost of the construction of the Kaduvayar Bridge at Negapatam.

A NEW HOSPITAL.—A very interesting ceremony was performed at Bandra on the 12th December, 1914, when the Hon'ble Mr. Claude Hill opened the new Kharsedji Beramji Bhahba Hospital and the Sir Cowasji Jehanghir Dispensary. The Bandra Municipality is to be congratulated on the establishment of a worthy beginning to the provision of proper hospital facilities on modern lines.

TOWN EXTENSION AND HYDRO-ELECTRIC SCHEMES.—A scheme for the extension of Salem town and a hydro-electric scheme for Coimbatore town are under the consideration of the Madras Government.

RANGOON ROADS.—To avoid large expenditure on roads from revenue, the Government of Burma are considering a scheme whereby a systematic road-programme can be carried out in Rangoon by means of loans.

INFANT MORTALITY.—The lowest rate of infant mortality (171·75) during 1913 was recorded in the province of Bihar

and Orissa while the highest rate (230·86) was recorded in the Central Provinces.

CONJEEVERAM MUNICIPAL CHAIRMANSHIP.—The Municipal Councillors of Conjeveram having failed to make an appointment of their Chairman by election within two months from the receipt of the direction to that effect under Clause (b) of Sub-section 1 of Section 14 of the Madras District Municipalities Act, 1884, the Governor in Council, in exercise of the power vested in him by Sub-section (2) of the Section 14 has been pleased to appoint M. R. Ry. A. Ramaswamy Sastriyar Avergal to be Chairman of the Municipality of Conjeveram.

COMPULSORY VACCINATION.—Under Section 106 of the Madras Local Boards Act, 1884, the Governor in Council has been pleased to declare that vaccination shall be compulsory throughout the district of Malabar, except in the Wynaad taluk and the Attapadi valley, from and after the 1st January, 1915.

A NEW CREMATORIUM.—The Rangoon Municipality decided in favour of the “total destruction process” for dealing with carcases, and a crematorium to the design of Messrs. Meldrum of Manchester has been constructed at a cost of Rs. 30,000. The plant which is housed in a substantial building adjoining the skinning yard consists of a furnace where offal and waste may be dealt with and a cremating chamber fitted with a main charging door at the top for large carcases and a side-door for small ones.

WATER SUPPLY SCHEMES IN MADRAS PRESIDENCY.—A water supply scheme for Palamcottah and Tinnevely is under the consideration of Government. A separate water supply scheme has been sanctioned for Tuticorin. The Sanitary Engineer has been requested to investigate the possibility of utilising the springs rising near the Western Ghats.

VACCINATION.—The Madras Government have decided to abandon the “trial scheme” of vaccination and have asked

District Boards to submit proposals for the employment of better-trained Vaccinators and Deputy Inspectors of vaccination on enhanced scales of pay.

VIZAGAPATAM MUNICIPAL COUNCIL.—In modification of the notification No. 24, Financial, published in page 1 of the Fort St. George Gazette Extraordinary, dated 19th March 1885 the Governor in Council has been pleased under Cl. (11) of Section 12 of the Madras District Municipalities Act, 1884, to declare that the maximum strength of the Municipal Council of Vizagapatam shall henceforward be 21 and the number of Councillors to be appointed by election shall be 16.

NEW PLAN OF THE CITY OF LONDON.—A new general plan of the City of London has been issued by the Corporation. The plan which has been prepared by the Engineer to the Corporation is on a scale of 24 inches to the mile. Public and quasi-public buildings, churches, etc. are indicated by distinctive shadings, and lines of surface and subsurface railways are also shown.

MALNAD IMPROVEMENT SCHEME.—The Government of Mysore have, in pursuance of the recommendations of the Deputy Commissioner and Chairman of the Malnad Improvement Committee, directed that the Village Sanitation Rules be introduced into all the villages dealt with under the Malnad Improvement Scheme, irrespective of the number of houses in the villages.

ELECTRIC POWER FOR BOMBAY.—The Tata Hydro-Electric Power Supply Company, Ltd., is sending out survey parties to find out a suitable place wherefrom to draw more electric power for Bombay. It is estimated that 160,000 horse power of energy would be required to meet the demands of Bombay. The Company's existing Electric Power Station at Lonavla, vast as it is, could supply only 1,00,000 horse power of energy.

POPULAR LECTURES ON SANITARY SUBJECTS.—The Government of Madras have approved a revised syllabus of popular

lectures on sanitary subjects and the model lectures* on water, food, consumption, dysentery, guineaworm, cholera and plague prepared by Major W. A. Justice, I. M. S., Sanitary Commissioner, and have requested him and the Director of Public Instruction to issue to the members of the subordinate Sanitary and Educational staff the instructions necessary to secure the starting of lectures. It is hoped that all local bodies will co-operate with the above staff in order to make the scheme a success.

TOWN-PLANNING.—The marked growth amongst the well-to-do classes of the desire for living in more spacious suburban areas outside the old limits of the town brings Municipal Councils face to face with the problem of town-planning. The efforts to relieve congested areas in cities also tend towards a closer study of scientific town-planning. Municipal Councils should, therefore, feel highly grateful to the Madras Government for having organised a systematic course of lectures on town-planning by Prof Patrick Geddes, the well-known authority upon town-planning. Professor Geddes has arranged to hold at the Senate House an Exhibition on town planning from the 18th January to Saturday, 6th February. Simultaneously with the Exhibition, he is delivering a course of lectures which is arranged in three parts. The first part deals with the connected problems in town planning presented by typical towns in this Presidency; the 2nd part deals with the wider aspects and issues of town-planning in India and European cities; while the third part (given under the auspices of the University of Madras) embodies a more general study of civics and of cities in this varied evolution of progress, deterioration and renewal. The course will thus consist of 3 parts which, each complete in itself, will form in continuation a connected study of the subject from its simpler to its more complex problems.

The Bombay and Bengal Governments are participating in the arrangement of the Madras Government with Professor Geddes, and it is understood that Professor Geddes will, on

* The model lecture on water is reprinted at p. 63.

the completion of his engagement with the Madras Government, proceed to Bombay and Calcutta and deliver a similar series of lectures and hold a Cities and Town Planning Exhibition. The Exhibition, however, is on a somewhat, diminished scale, for a very valuable collection of maps, plans, models, etc., was lost in the steamer, *Clan Grant*, one of the vessels sunk by the notorious German cruiser *Emden*. The value of the material that was lost is estimated at nearly three thousand pounds, but it is difficult to estimate the loss in money value, for the labour which had been expended upon the material by Professor Geddes and his town-planning friends was enormous, and a great part of the material is irreplaceable.

A STATUE FOR LORD RIPON.—On the morning of the 29th December, 1914, H. E. Lord Pentland performed the interesting ceremony of unveiling the statue of the late Marquis of Ripon, on the Mount Road, Madras. In several ways the ceremony was a unique one. It is the first monument erected in India in honour of the Viceroy whose term of office was “memorable and distinguished in many respects, perhaps particularly for his efforts to encourage the development of Self-Government.” The statue was unveiled at a time when, on account of the Indian National Congress and other all-India Conferences, leading men from all parts of India had come to Madras. The unveiling ceremony was performed by H. E. Lord Pentland who, as he himself said, had the honour of being Lord Ripon’s confidential colleague and of serving with him in his cabinet. The arrangements for securing the statue were entrusted to Sir William Wedderburn, Bart., and the statue itself is the work of the eminent sculptor, Mr. Derwent Wood. The erection of the pedestal for the statue was under the supervision of Mr. J. R. Coats, M.I.C.E., the Corporation Engineer.

INAUGURATION OF THE MADRAS NEW WATERWORKS.—On another page, we give a description of the Madras City New Waterworks which were inaugurated on the 17th of

December, 1914, under the distinguished patronage of His Excellency Lord Pentland. The scheme has been worked out on the most modern lines ; and great credit is due to Mr. J. W. Madeley, the Special Engineer, who, amidst great difficulties, has succeeded in completing the installation of the works. Mr. Madeley's work with regard to the city water-supply cannot, however, be said to be over, for he has difficult work still before him in installing a system of water waste prevention. The old water mains and pipes were laid forty years ago, and Mr. Madeley had great apprehensions as to whether the pipes would stand the increased pressure under the new system. Unfortunately, his apprehensions proved correct. Within a week of the opening of the works, two of the mains burst, and the water-supply had to be cut off for two days from a large portion of the city. It is now abundantly clear that the work of completing the distributary system should be pushed on as quickly as possible, if the whole city is to have the full benefit of the new installation. The new 30-inch main for the supply of southern districts of Madras is already complete and is in use. The new 42-inch main to the north will be completed very shortly ; and we understand that proposals have been put forward to interconnect the new and old pipes in such a manner that even should there be a burst in the old pipes, the area supplied by them may be provided with water in a roundabout way from the new mains. Thus, in a short while, the whole of the city will enjoy the new filtered water supply under a pressure very much higher than that of the present. That this boon will be greatly appreciated by the citizens of Madras is proved by the large number of grateful communications that were received by the Corporation officials as soon as the increased pressure was applied.

A NEW L. G. B. APPOINTMENT :—Mr. Raymond Unwin has been appointed Chief Town-planning Inspector under the Local Government Board, in succession to Mr. Thomas Adams. Mr. Unwin is special lecturer in civic design and town-planning in the University of Birmingham and Vice-

President of the Town Planning Institute. He is the author of "Town Planning in Practice" and "Nothing gained by overcrowding."

EXTENSION OF LOCAL SELF-GOVERNMENT:—It is announced by Sir James Meston that he hopes within the next few months to put before the public a measure for extending the scope of local self-government in the United Provinces, as far as Municipalities are concerned, and for enabling the larger Municipalities to elect their own Chairmen. At the same time "certain safeguards for the general public" have, he says, been inserted which, he is afraid, may not meet with universal acceptance. But he declares that they have been inserted in all good faith and do not in any way detract from the broad principle that in Municipal bodies the responsibility should rest with those who are chosen representatives of the people. The *India* apprehends that the "safeguards" referred to will take the form of communal representations.

NEW MUNICIPALITIES IN MADRAS:—In exercise of the power conferred by sub-section (4) of section 4 of the Madras District Municipalities Act, 1884, the Governor in Council has been pleased to declare that the town of Peddapuram and the town of Narasaraopet shall be Municipalities on and from the 1st day of January, 1915, on which date the Peddapuram Union and the Narasaraopet Union shall cease to exist. Until further orders, the maximum number of Municipal Councillors to be appointed for the time being, for the Municipality of Peddapuram, is to be 12; none of the Councillors will be elected and the Chairman will be appointed by the Governor in Council.

Under the provisions of Sub-section (1) of Section 4 of the same Act, the Governor in Council has declared his intention to constitute as a Municipality the town of Virudupatti and the adjoining village. The formation of a Municipality in Tiruppur (Coimbatore) is also under the consideration of Government.

Statistical Tables.

Number and Constitution of Municipal Councils and incidence of income and taxation in the several provinces.*

THE following table shows, in one view, the number and constitution of Municipal Councils, and incidence of income and taxation, in the several provinces. It will be noticed that Bengal has the largest number of municipalities, and Bihar and Orissa the smallest. 32 municipalities in the Punjab and 16 in Bengal were appointed by nomination only. The Punjab has the highest incidence of income, Rs. 4-0-11, and the highest income of taxation, Rs. 2-8-11, per head of population.

	Bengal.	Bihar and Orissa.	Madras.	Punjab.	United Provin- ces.
1. Number of municipalities ..	111	55	61	104	55
2. Population within municipal limits ..	1,97,4638	1,167,012	2,082,257	606,788	1,167,012
3. Number of towns of which municipalities are appointed partly by election and partly by nomination ..	95	48	58	71	48
4. Number of towns of which municipalities are appointed by nomination only ..	16	7	3	32	7
5. Aggregate number of members of municipalities (on 31-3-13):—					
(a) Ex-officio ..	101	99	70	214	99
(b) Nominated ..	542	259	387	407	259
(c) Elected ..	880	435	490	541	435
Total ..	1,523	793	947	1,162	793
6. Of the above					
(a) Officials ..	176	131	189	239	131
(b) Non-officials ..	1,347	662	758	923	662
(a) Europeans and Anglo-Indians ..	158	133	138	96	133
(b) Indians ..	1,365	663	809	1,066	660
7. Incidence of income per head of population ..	2-9-4	1-13-1	3-4-5	4-0-11	1-13-1
Incidence of taxation per head of population ..	1-15-4	1-2-8	1-7-4	2-8-11	1-2-8

*The figures are for 1912—13, which are the latest available.

Provincial Vital Statistics.

THE following table shows the birth and death rates and the rates of infantile mortality in the several provinces of India. Taking the figures for 1913, it will be noticed that the Central Provinces has the highest birth rate, 49·26, the United Provinces coming next with 47·67. The highest death rate was recorded in the United Provinces, 34·84, the Central Provinces coming next with 30·28. The highest rate of mortality among infants under one year was registered in the Central Provinces and the lowest in the Madras Presidency.

Provinces.	Death Rate.		Birth Rate.		Infant Mortality Rate per 1,000 of births re- gistered in
	1912	1913	1912	1913	1913.
Assam	31·16	33·06	25·04	27·66	201·21
Bengal	35·30	33·75	29·97	29·38	209·59
Bihar and Orissa	42·52	42·10	31·01	29·14	171·75
Bombay	34·97	34·96	34·88	26·63	188·42
Burma	32·13	32·61	27·04	24·99	221·40
Central Provinces	48·24	49·26	42·34	30·28	230·86
Madras	30·90	32·20	24·30	21·40	175·40
N. W. Frontier Pro- vince	37·07	36·17	23·39	24·65	175·86
Punjab	45·30	45·40	26·63	30·20	216·91
United Provinces	45·38	47·67	29·91	34·84	229·70



Local Self-Government.

RESOLUTION OF THE GOVERNMENT OF INDIA

Dated 18th May, 1882,

Initiating Measures of Local Self-Government in India.

THE Governor-General in Council in the Resolution of the Financial Department, dated the 30th September, 1881, set out, for the information of the Local Governments, the principles upon which it was proposed to revise the agreements then in force for the administration of the Provincial Services, and to establish the decentralised system of finance on a uniform and extended basis. It was explained that intimately connected with this general scheme for the decentralisation of finance was the very important question of developing local self-government. Considerable progress in the direction had, it was admitted, been made since 1870. A large income from local rates and cesses had been secured, and in some provinces, the management of this income had been freely entrusted to local bodies. Municipalities had also increased in number and usefulness. But there was still, it was remarked, a greater inequality of progress in different parts of the country than varying local circumstances seemed to warrant. In many places, services admirably adapted for local management were reserved in the hands of the central administration, while everywhere heavy charges were levied on Municipalities in connection with the Police, over which they had necessarily no executive control.

Paragraph 11 of the Resolution went on to say:—"His Excellency the Governor-General in Council is therefore of opinion that the time has now arrived when further practical development may be afforded to the intentions of Lord Mayo's Government, and that the Provincial agreements should no longer exclude from all consideration the mass of taxation under Local and Municipal management, together with the similar resources still retained in Provincial control, and ignore the question of local self-government. The Provincial Government, while being now largely endowed from Imperial sources, may well, in their turn, hand over to local self-government considerable revenues, at present kept in their own

hands, but similar in kind to many which have long been 'locally' managed with success by Committees, partly composed of non-official members and subject only to a general remedial control reserved to the State by the Legislature. At the same time, such items should be generally made local as the people are most likely to be able to understand the use of, and to administer well. His Excellency would therefore invite the Local Governments to undertake a careful scrutiny of Provincial, Local, and Municipal accounts, with the view of ascertaining (1) what items of receipt and charge can be transferred from 'Provincial' to 'Local' heads, for administration by Committees comprising non-official and, wherever possible, elected members, and what items already 'Local,' but not so administered, might suitably be so; (2) what re-distribution of items is desirable, in order to lay on Local and Municipal bodies those which are best understood and appreciated by the people; (3) what measures, legislative or otherwise, are necessary to ensure more local self-government. Incidentally to the scrutiny, they will probably notice, and might carefully consider (4) ways of equalising Local and Municipal taxation throughout the Empire, checking severe or unsuitable imposts, and favouring forms most in accordance with popular opinion or sentiment. The Government of India have already made some preliminary enquiries in the same direction, the results of which will shortly be communicated to the several Local Governments for consideration in conjunction with their own."

2. Accordingly, on the 10th October, 1881, letters were addressed to the various Local Governments indicating those branches of expenditure which appeared to the Government of India most suited for local control, and inviting each Government to examine any other heads of accounts which might seem to cover items capable of transfer to such control. It was pointed out that it was not the intention of the Government of India that the proposed transfer of the control of expenditure of a specially local character to local bodies should involve any addition to existing local burdens; and it was, therefore, shown to be necessary to arrange for the simultaneous transfer of receipts sufficient to meet any net balance of additional expenditure which in any instance might arise. The receipts to be thus transferred should, it was suggested, be such as to afford a prospect that, by careful administration, with all the advantages due to local

sympathy, experience and watchfulness, they would be susceptible of reasonable increase. In cases where larger assignment of funds were required, the receipts from pounds, or a share of the assessed taxes collected within the jurisdiction of the local body, were indicated as suitable sources of revenue to be made over. But on this, as on other points, a wide discretion was left to the Local Governments.

3. As regards the character of the local bodies to whom those powers of control and administration were to be entrusted, it was remarked that already in most parts of British India there were in existence Municipal Committees whose powers might in many cases be advantageously extended, and District Committees for various purposes, which might very well be consolidated into single homogeneous working bodies, with ancillary Subordinate Committees for each tahsil or sub-division of the district. It was suggested that the Magistrate and Collector should be President of the District Committee, and the Assistant or Deputy Magistrate in charge of the sub-division, President of the Subordinate Committees; but in each case the local bodies should, it was said, comprise persons not in the service of Government, and elected or nominated, as might seem best, in a proportion of not less than from one-half to two-thirds of the whole numbers. For the satisfactory development of this plan, it was admitted that legislation would probably be necessary in most provinces, and the Local Governments were invited in their replies to explain the general outlines which such legislation should follow. In regard to this it was said—

“Special attention will be required in settling the relations between the various local bodies and the officers of the general Administration, and in providing for a certain measure of control and inspection on the part of Government. It would be hopeless to expect any real development of self-Government, if the local bodies were subject to check and interference in matters of detail; and the respective powers of Government and of the various local bodies should be clearly and distinctly defined by statute, so that there may be as little risk of friction and misunderstanding as possible. Within the limits to be laid down in each case, however, the Governor-General in Council is anxious that the fullest possible liberty of action should be given to local bodies.”

4. The policy thus enunciated by the Government of India has, on the whole, been loyally, and in some cases cordially, accepted by the Local Governments, several of which have already drawn up schemes for giving effect to it, and have submitted these for the information of the Government of India. The Governor-General in Council desires to acknowledge the care and thought with which some of these schemes have been worked out. Upon each the Government of India will communicate hereafter its views in detail to the Local Government concerned. Meantime, however, it will be convenient that the Governor-General in Council should explain somewhat more fully than he has hitherto done the general mode in which he would wish to see effect given to the principle of local self-government throughout British India outside the Presidency Towns. This is the more necessary, as further consideration of the subject and examination of the schemes prepared for the different provinces have suggested the propriety of certain modifications of the plan sketched out in the Circular letters of the 10th October last.

5. At the outset, the Governor-General in Council must explain that, in advocating the extension of local self-Government, and the adoption of this principle in the management of many branches of local affairs, he does not suppose that the work will be in the first instance better done than if it remained in the sole hands of the Government district officers. It is not, primarily, with a view to improvement in administration that this measure is put forward and supported. It is chiefly desirable as an instrument of political and popular education. His Excellency in Council has himself no doubt that in course of time, as local knowledge and local interest are brought to bear more freely upon local administration, improved efficiency will in fact follow. But at starting there will doubtless be many failures, calculated to discourage exaggerated hopes, and even in some cases to cast apparent discredit upon the practice of self-government itself. If, however, the officers of Government only set themselves, as the Governor-General in Council believes they will, to foster sedulously the small beginnings of independent political life; if they accept loyally and as their own the policy of the Government; and if they come to realise that the system really opens to them a fairer field for the exercise of administrative tact and directive energy than the more autocratic system which it

supersedes, then it may be hoped that the period of failures will be short, and that real and substantial progress will very soon become manifest.

6. It is not uncommonly asserted that the people of this country are themselves entirely indifferent to the principle of self-government; that they take but little interest in public matters; and that they prefer to have such affairs managed for them by Government officers. The Governor-General in Council does not attach much value to this theory. It represents no doubt the point of view which commends itself to many active and well-intentioned district officers; and the people of India are, there can be equally no doubt, remarkably tolerant of existing facts. But as education advances, there is rapidly growing up all over the country an intelligent class of public spirited men whom it is not only bad policy, but sheer waste of power, to fail to utilise. The task of administration is yearly becoming more onerous as the country progresses in civilisation and material prosperity. The annual reports of every Government tell of an ever-increasing burden laid upon the shoulders of the local officers. The cry is everywhere for increased establishments. The universal complaint in all departments is that of over-work. Under these circumstances, it becomes imperatively necessary to look around for some means of relief; and the Governor-General in Council has no hesitation in stating his conviction that the only reasonable plan open to the Government is to induce the people themselves to undertake, as far as may be, the management of their own affairs; and to develop, or create if need be, a capacity for self-help in respect of all matters that have not, for imperial reasons, to be retained in the hands of the representatives of Government.

7. If it be said that the experiments hitherto made in this direction have not been encouraging, the Governor-General in Council must avow his belief that the principle has not as yet been, in any general or satisfactory fashion, fully and fairly tried. There is reason to fear that previous attempts at local self-government have been too often over-ridden and practically crushed by direct, though well-meant, official interference. In the few cases where real responsibility has been thrown upon local bodies and real power entrusted to them, the results have been very gratifying. There is even now a vast amount of assistance rendered to the

administration by Honorary Magistrates, members of Municipal Corporations and other Committees; and there is no antecedent improbability in the theory that if non-official auxiliary agency were more thoroughly organised and more fully trusted, there would be a speedy and marked improvement, not only in its amount, but in its efficiency.

8. Holding, therefore, that it is the duty and interest of the ruling power to take care that the further advance which it is now proposed to make in the direction of local self-government shall be, though cautious, yet at the same time real and substantial, the Governor-General in Council will proceed to indicate, for the guidance of the Provincial Administrations, the general principles upon which, in the judgment of the Government of India, these measures should be shaped. The subject may, for the purposes of this Resolution, be divided into two parts—the first, relating to the mode in which Local Boards, whether Municipal or District, should generally be constituted; and the second, to the degree of control which the Government should retain over such bodies, and the manner in which that control should be exercised.

9. In regard to the first of these points, the Governor-General in Council would observe that he is quite aware of the absurdity of attempting to lay down any hard-and-fast rules which shall be of universal application in a country so vast, and in its local circumstances so varied, as British India. It would be unreasonable to expect that any uniform system of Local Government could be applied with equal success in provinces differing as the Punjab, for instance, differs from Madras, or Bengal from Burmah. A large latitude of application must, therefore, in every case be left to the local authorities. Indeed, we are really as yet so much in the infancy of self-government, and have, perhaps, so little knowledge of the directions in which it would naturally develop itself among the people, that there is a distinct advantage in having different schemes tried in different places, in order to test, by practical experience, what arrangements are best suited to the ways of thinking, habits, and other idiosyncrasies of the heterogeneous populations of the Empire. But there are, nevertheless, fundamental principles which, after every allowance has been made for local peculiarities, must be universally followed and frankly adopted, if the system is to have anywhere a fair trial.

10. The Government of India desires, then, that while maintaining and extending, as far as practicable, the plan of municipal government in the cities and towns of each province, the Local Governments will also maintain and extend throughout the country, in every district where intelligent non-official agency can be found, a net work of Local Boards, to be charged with definite duties and entrusted with definite funds. The Governor-General in Council considers it very important that the area of jurisdiction allotted to each Board should in no case be too large. If the plan is to succeed at all, it will be necessary to secure among the members both local interest and local knowledge. Experience proves that District Committees are, as a rule, very badly attended by members not actually residing in the vicinity of the head-quarters' station. Those who do attend have frequently no intimate acquaintance with the wants of outlying parts of the district. The consequence is, either that undue attention is given to the requirements of the immediate neighbourhood of the central station, or that the business falls entirely into the hands of the district officer, the Committee contenting itself with formally endorsing his proposals. Modifying, therefore, to some extent the suggestions made in paragraph 8 of the Circular letters of the 10th October last, the Governor-General in Council desires that the smallest administrative unit—the sub-division, the taluka, or the tahsil—shall ordinarily form the maximum area to be placed under a Local Board. He would not indeed object to even smaller jurisdiction, were these deemed suitable. In some provinces it may be found possible to leave these Sub-divisional Boards to their own independent working, arranging for a periodical District Council, to which delegates from each Local Board might be sent, to settle such common matters as the rate of land cess to be levied during the year, allotment to be made of district funds, and other questions of general interest. In other provinces, again, it may be thought best to have a District Board with controlling power over the smaller Local Boards. But whatever system is followed, the cardinal principle, which is essential to the success of self-government in any shape, is this, that the jurisdiction of the primary Boards must be so limited in area as to ensure both local knowledge and local interest on the part of each of the members.

11. The Municipal Committees will, of course, remain the Local Boards for areas included within town limits. The relations

between such Municipal Boards and the Sub-divisional or District Boards within whose jurisdiction the towns lie must be carefully settled in each case. In some instances, the Town Boards will be left entirely independent and apart. In others, it may be found desirable to give the Rural Boards a certain share in the settlement of questions of common interest. In others, again, the Town Boards would be required to send delegates to the District Board or Council.

12. The Local Boards, both urban and rural, must everywhere have a large preponderance of non-official members. In no case ought the official members to be more than one-third of the whole, unless in places in which the elective system is followed, when there would be no ground for objecting to an elected member merely on the ground that he was in the service of Government. The Governor-General in Council is disposed to think that the non-official members of the Boards should hold office for at least two years after election or appointment; but probably the best plan to follow would be that of the compulsory retirement by rotation of a fixed proportion of members, those retiring being eligible to sit again. A detail of this description may, however, fitly be left to the Local Government.

13. Members of the Boards should be chosen by election wherever it may, in the opinion of the Local Governments, be practicable to adopt that system of choice. The Governor-General in Council does not require the adoption of the system of election in all cases, though that is the system which he hopes will ultimately prevail throughout the country, and which he wishes to establish now as widely as local circumstances will permit. Election in some form or other should be generally introduced in towns of any considerable size, but may be extended more cautiously and gradually to the smaller Municipalities and to backward rural tracts. Even as regards these last, however, the Governor-General in Council is disposed to think that if the Government officers cordially accept the principle, and set themselves to make it successful, a great advance might be made with comparatively little difficulty. Thus, when the Local Governments had determined the nature of the qualifications suited to such a district (and these might ordinarily at first be fairly high), each sub-divisional officer might be instructed to prepare a list or register of candidates qualified to sit upon the Local Board, and might invite all those residing in

any particular area, such as a police (thana) jurisdiction, to meet him on a day fixed at some convenient spot near their homes. He might then explain to them the objects of Government, and the nature of the duties they were invited to undertake, and call upon them to elect then or on a future day the number of representatives that had been fixed for the area in question. In the course of a few years, when the members of the Board find that they have real powers and responsibilities entrusted to them, any Government interference will become unnecessary. The electors may safely then be left to conduct their own elections under such rules as may be from time to time laid down.

14. As to the system of election to be followed, the Governor-General in Council would here also leave a large discretion to the Local Governments. Experience is wanting to determine the most suitable general system for each province; and it is desirable that a variety of plans should be tried in order to a future comparison of results. The simple vote, the cumulative vote, election by wards, election by the whole town or tract, suffrage of more or less extended qualification, election by castes or occupations—these and other methods might all be tried. New methods, unthought of in Europe, may be found suitable to India; and after a time it will probably be possible to say what forms suit best the local peculiarities and idiosyncrasies of the different populations. The Provincial Governments should, through their district officers, consult the leading Natives of each locality, not only as to the possibility of introducing the elective system, but as to the arrangements most likely to meet their local circumstances; and should use every effort to make the schemes adopted as consonant as possible to the feelings and habits of the people.

15. Doubtless the first consequence of this mode of proceeding will be that the electoral system, viewed as a whole, will present for a time a very diversified appearance, and in some places arrangements made will turn out badly and call for change; but the Governor-General in Council is not disposed to attach undue importance to this. The problem before the Government is one of no slight difficulty; being that of discovering in what manner the people of the towns and districts of British India can be best trained to manage their own local affairs intelligently and successfully. The attempts hitherto made

with this object have met with but little success. The best men in many cases do not at present present themselves as candidates for Municipal Office. The number of voters is generally insignificant compared with the number on the registers. And yet there can be no doubt that among the more intelligent classes of the community there is a real and growing interest being taken in administrative matters. It may be suspected, therefore, that the cause of comparative failure in the efforts hitherto made is to be found rather in the character of those efforts than in the nature of the object pursued. They have been, it seems to the Governor-General in Council, wanting to a great degree in earnestness and in real endeavours to adopt the system adapted to the feelings of the people by whom it has to be worked. If this is so, the remedy must lie in ascertaining by patient and practical experiment how best to call forth and render effective that desire and capacity for self-government which all intelligent and fairly educated men may safely be assumed to possess.

16. With a view to stimulating the candidature of men of respectable standing in native society, and to mark the importance of the functions of these Local Boards in the eyes of Government, the Governor-General in Council is pleased to direct that the courtesy titles of "Rai (or Rao) Bahadur" or "Khan Bahadur" shall in all official correspondence be applicable to native members of all Local Boards during their term of office.

17. Turning now to the second division of the subject—the degree of control to be retained by the Government over the Local Boards, and the manner in which that control should be exercised—the Governor-General in Council observes that the true principle to be followed in this matter is that the control should be exercised from without rather than from within. The Government should revise and check the acts of the local bodies, but not dictate them. The executive authorities should have two powers of control. In the first place, their sanction should be required in order to give validity to certain acts, such as the raising of loans, the imposition of taxes in other than duly authorised forms, the alienation of municipal property, interference with any matters involving religious questions or affecting the public peace, and the like. (The cases in which such sanction should be insisted upon would have to be carefully considered by each Government, and they would at the outside be probably somewhat numerous, but, as the Boards gained

in experience, might be reduced in number.) In the second place, the Local Government should have power to interfere either to set aside altogether the proceedings of the Board in particular cases, or, in the event of gross and continued neglect of any important duty, to suspend the Board temporarily, by the appointment of persons to execute the office of the Board until the neglected duty had been satisfactorily performed. That being done, the regular system would be re-established, a fresh Board being elected or appointed. This power of absolute supersession would require in every case the consent of the Supreme Government. A similar power is reserved to the Executive Government under several English statutes; and if required in England, where local self-government is long established and effective, it is not probable that it could be altogether dispensed with in India. It should be the general function of the executive officers of Government to watch, especially at the outset, the proceedings of the Local Boards, to point out to them matters calling for their consideration, to draw their attention to any neglect of duty on their part, and to check by official remonstrance any attempt to exceed their proper functions, or to act illegally or in an arbitrary or unreasonable manner.

18. It does not appear necessary, for the exercise of these powers, that the chief executive officers of towns, sub-divisions or districts should be Chairmen or even members of the local Boards. There is, indeed, much reason to believe that it would be more convenient that they should supervise and control the acts of those bodies, without taking actual part in their proceedings. The Governor General in Council is aware that many high authorities hold that the district officer should always be *ex-officio* Chairman of all the Local Boards within the district, and should directly guide and regulate their proceedings. This was indeed the view taken by the Government of India itself in the Circular letters of the 10th October last, so far as the constitution of District Boards was concerned. But even then the Governor-General in Council did not see his way to accepting the principle in the case of Municipal Boards; and further consideration has led him to the belief, that on the whole, it is better to lay down no such general rule in the case of any class of Local Boards. There appears to him to be great force in the argument that so long as the chief executive officers are, as a matter of course, Chairmen of the Municipal and District Committees, there

is little chance of these Committees affording any effective training to their members in the management of local affairs, or of the non-official members in taking a real interest in local business. The non-official members must be led to feel that real power is placed in their hands, and that they have real responsibilities to discharge. It is doubtful whether they have, under present arrangements, any sufficient inducement to give up their time and attention to the transaction of public business. There is this further objection to the district officer acting as Chairman, that if the non-official members are independent and energetic, risk may arise of unseemly collision between the Chairman and the Board. The former would be in a far more dignified and influential position if he supervised and controlled the proceedings of the Board from outside, acting as arbiter between all parties, and not as leader of any.

19. The Governor-General in Council therefore would wish to see non-official persons acting, wherever practicable, as Chairmen of the Local Boards. There may, however, be places where it would be impossible to get any suitable non-official Chairman, and there may be districts where the chief executive officer must for the present retain these duties in his own hands. But His Excellency in Council trusts that the Local Governments will have recourse sparingly to the appointment of executive officers as Chairmen of Local Boards; and he is of opinion that it should be a general rule that when such an officer is Chairman of any Local Board, he shall not in that capacity have a vote in its proceedings. This arrangement will, to some extent, tend to strengthen the independence of the non-official members, and keep the official Chairman, where there must be such, apart from the possible contentions of opposing parties.

The appointment of Chairman should always be subject to the approval of the Local Government, but need not be always made by it. The Governor-General in Council would be glad to see the Boards allowed, in as many cases as possible, to elect each its own Chairman. But this matter is one which must be left to the discretion of Local Governments.

20. These, then, are the principles upon which the Governor-General in Council desires to see the experiment of local self-government introduced throughout the several provinces of India; and he

would ask the Local Governments to revise their several schemes and shape any proposed legislation in general accordance with these principles. On such of the local schemes as have already come before the Government of India, separate orders will, as already intimated, be passed in accordance with the foregoing exposition of policy. There are, however, one or two points to which attention has been drawn by a perusal of the orders of the Local Governments, which, though matters of detail, are still of sufficient importance to warrant their being noticed in this Resolution.

21. In the orders of the 10th October last, the Government of India laid special stress on the importance of entrusting to the Local Boards, not merely the expenditure of fixed allotments of funds, but the management of certain local sources of revenue. Sufficient regard does not as yet appear to have been paid to this part of the scheme. Not only should every Local Board have the entire control over the proceeds of all local rates and cesses levied within its jurisdiction for its own special purposes, but along with the charge of any expenditure that is at present Provincial should be transferred, where possible, the management of equivalent revenue. The License Tax assessments and collections, for example, might very well be made over to the Local Boards, municipal and rural, in many parts of the country, subject to the control provided by the existing law. Pounds and ferry receipts have been already indicated as suited for transfer. The allotment of lump grants from Provincial revenues should be reserved as much as possible to balance receipts and expenditure of the Local Boards. The Governor-Général in Council hopes that this part of the scheme will receive very careful consideration from all Local Governments, with a view to giving full effect to the policy which the Government of India has laid down on this point.

22. Another point deserving of notice is the control that should be exercised over the execution of local works. It will not always be possible for a Local Board to entertain a competent engineer of its own: and in any case, when Government buildings and important works of other kinds are made over for maintenance, there must be some effective guarantee for thoroughness of execution. It will probably be most convenient that, while all subordinate establishments are entirely under the control of the Boards,

Government should supply the District Engineer and furnish professional supervision, the Boards defraying, in such manner as may be determined by the Local Governments with reference to the amount of work done for each Board, the payments to be made to Government on this account. Care must, however, be taken that the Boards are left unfettered in the initiation and direction of operations and that the Engineer is placed in the position of their servant and not of their master. The power of check vested in the district officer will suffice to remedy any carelessness or improper working on the part of the Boards. If this arrangement is carried out, it will probably be found possible to make over to the charge of the Boards most of the public buildings in the districts, and other works of various kinds which would otherwise have to be kept in the hands of the Government officers. Double establishments will thus be avoided, and public money saved.



Health and Sanitation.

Education in Sanitation.

THE Boards of Health in the United States have in the past few years turned their attention largely to educational campaigns. They realize that, while they must continue to quarantine and forcibly control epidemics of communicable diseases, in the long run general education in sanitation is far more effective.

As a typical instance of their educational work the following is cited :

Dr. W. S. Rankin, Secretary of the North Carolina State Board of Health, states that his board uses education as a means of doing public health work in four ways :

First, this department issues a monthly bulletin. We have 40,000 names on our mailing list, and reach about one-seventh of the white families in the State. We also get out during the year a teachers' edition of the bulletin. We have on our mailing list about 8,000 of the 10,000 public school teachers of North Carolina. We recognize that a permanent foundation for a sanitary civilization can be built in the pliable minds of childhood.

Second, this office issues weekly and daily newspaper articles on questions of public health. These articles are sent to all of the newspapers in the State, and about 60 or 65 per cent of them are used. Through the cordial co-operation of the State Press Association, this office is having distributed to the newspaper-reading public of North Carolina, about 200 miles of newspaper column health literature each year.

Third, a great many addresses on health subjects are delivered to the school teachers' meetings in this State. In one county of North Carolina, the county medical society has arranged a series of health lectures to be given by the various members of the county medical society before every school in the county. Before the school year has expired, most of these schools will have heard sanitary addresses from the medical men of their county on all the important preventable diseases.

Fourth, we are using all the influence we can bring to bear upon the school people of the State to teach the subject of sanitation and hygiene to the children; we are stressing these subjects as being more important than physiology or anatomy.

Model Lectures on Sanitary Subjects.

(PREPARED BY MAJOR W. A. JUSTICE, M.B., C.M., D.P.H.,
I.M.S., SANITARY COMMISSIONER FOR MADRAS.)

Pure Water.

Water forms about two-thirds by weight of the human body and no animal can carry on its vital functions in a dry state.

Absolutely pure water in the chemical sense is extremely rare and has only been obtained by repeated distillations in silver vessels.

When we talk of pure water in connection with its general uses, we do not mean chemical purity but that for all practical purposes it is free from noxious gases and injurious organic and metallic impurities and that it contains no excess of mineral ingredients although charged with a moderate amount of ordinary innocent saline matters and that it is well aerated.

The importance of an abundant supply of good water cannot be over-estimated; the mortality in India would be greatly reduced and the sickness proportionately, if we could always obtain a good water-supply.

Nature's method of purifying contaminated water is by evaporation and condensation. Water is evaporated principally from the tropical oceans and carried in clouds by currents of air, such as the monsoons, to be deposited as rain.

SOURCES OF WATER.

Although the sources of water are many and varied, they are all ultimately derived from this naturally distilled water which falls from the clouds.

Rain water, if we could collect this before it comes in contact with the earth and the dust and smoke of towns, would be good drinking water, as it is naturally pure water; but the supply is inconstant and cannot be relied on. A common practice in Cochin

where good drinking water is scarce is to collect rain water in chat-ties from the rain which falls on the cocoanut palms. In places where the water is very hard, rain water is collected in barrels for bathing purposes.

Upland surface water is rain which has fallen on land with little or no people living on it and the soil of which is but little cultivated. It is collected in tanks and lakes and stored for use. It is usually considered sweet water, as it contains very little saline matter. The Ootacamund water-supply is an upland surface water.

Springs and Wells.—The rain water has here percolated through soil and subsoil and is by pressure forced to the surface through fissures in which state it is called spring water; or, holes are artificially sunk in the ground to form wells. The character of this water varies according to the nature of the soil through which it has percolated or passed. If it passes through lime stone, it absorbs lime from the rock and is a very hard water, *e.g.*, the water of Coimbatore. A hard water is one with which it is very difficult to form a lather with soap. Spring and well waters are usually sparkling and naturally pure waters. Shallow wells are those which have not passed through an impervious stratum. The water of such wells is organically impure. A surface well water is never safe, however well its sides are cased with cement, if there is any pollution of the soil within the area drained by the well. The more a well is pumped, the greater its liability to pollution through suction. Wells in Indian towns frequently have drains, privies, cow-sheds, etc., within a few feet of them and by soakage from them become polluted in consequence. Pollution of deep surface wells may take place from some considerable distance; the utmost distance may be reckoned at about half a mile.

Deep wells are wells sunk through an impervious layer to a water-bearing stratum; the sides of the well should be cemented from the top of the parapet wall down to the impervious stratum of clay or rock which covers the underground channel. Deep wells usually yield a fairly abundant supply but the water is hard and the cost of pumping considerable.

Tube wells have often proved very satisfactory. The supply of water afforded by them is of excellent quality and very cool. They

are not suitable for every locality; hard strata of rock prevent the tube being driven down to reach the water. They are useful in dry deserted beds of rivers. They are liable to get choked with fine sand. They should then be taken up, cleaned and replaced.

River Waters.—River water from large rivers, if looked after and filtered, is a good source of drinking water for a town. In India where many rivers are dry for a considerable part of the year, a supply of water may be obtained by constructing a dam of a certain height across the river bed and so diverting the freshes, when they come, into the settling tanks, as is done in Madras where almost the entire supply is obtained between the middle of October and the end of the year. Infiltration wells and galleries are now placed in the water-bearing strata of river beds or underground streams, the water collected by pipes to a well whence it is pumped to a reservoir and distributed in pipes to drinking fountains.

So far we have learnt then the sources of pure water. Our great object should be how to maintain its purity after collection. Unfortunately, it is almost impossible to persuade the people of this country that it is a dangerous or insanitary practice to wash their cloths, soiled perhaps with cholera or typhoid dejecta, on the top of the parapet of a well and allow the drippings to fall back into the well. This practice too you have all seen in the drinking water tanks in your villages.

Further, the practice of drawing water from wells with a brass or other vessel which is cleaned by being scrubbed with earth from a dirty pond or from the road or anywhere with some moisture about is insanitary. The ropes also used for attaching the vessel are allowed to coil on the ground trodden with dirty feet around the well and at the next attempt to draw water, the filth on the rope falls into the well. In the country troughs for water cattle, etc., are placed against or near the well the contents of which percolate back into the well. The throwing of stones, pieces of wood and fibres of all kinds into the well all tend to pollute the water in it. The mother who is nursing her cholera stricken child may rush to the well with a *loti* soiled with emanations from her patient, dip it into the well and cause an epidemic of cholera in the village. Where wells are scarce, as in

Bellary, water has to be distributed in water carts. You can see the waterman filling the cart at the well and how he pollutes the water by using his hand as a funnel. See also the rope coiled on the coping.

Step wells are very common in some parts of this Presidency and in such parts guinea-worm is very prevalent from people suffering from guinea-worm entering the well to draw water. A man once caused a very bad epidemic of cholera in a village by bathing his legs in a step well to soothe the cramps he felt during an attack of the disease. These step wells should be avoided as sources of drinking water.

Wells are protected from surface drainage, that is, washings from the surface of the land round about and from the rain carrying with it impurities from the surrounding of the well by a parapet wall and by being cemented on the inside right down to the summer or hot weather level of the water. For further protection a drain should always surround the well which should be extended to a carrying off drain at least 50 yards away from the well to carry away the spill water.

Undoubtedly, the best method of protecting a well is to provide it with a pump and a cover. In this way no injurious pollution can take place and contamination by dirty vessels and ropes used for drawing the water avoided.

When a pump is used, no receptacle of any kind should be used to collect the water; the water should be taken from the pump direct. Sunlight has no direct action on water in a well; and for complete protection of a well it should have a cover to keep out dust, etc. A properly constructed well fitted with a cover and provided with a pump will ensure a protected water-supply and the pollution of such a water will rest with the drawer of the water. The clothes and person of one who draws water should be perfectly clean and the vessels with which the water is taken should be scrupulously clean. They should not be cleaned by any sort of moist earth but should be scrubbed with a clean cloth and some clean fine sand and put out in the sun to dry before and after use. Brass vessels as used in this country are difficult to keep clean and dirt is not easily seen on them. Glass and China vessels have not these drawbacks.

Vessels used for storing water inside the dwelling house should have covers to keep out dust and other sources of pollution. It is the handling of water after it is drawn that causes most of the trouble that is attributed to drinking water.

To avoid this handling and contact with human beings generally, water is where possible distributed in pipes and taps direct to the consumer. Over a score of towns in Madras Presidency have a protected water-supply distributed in pipes to drinking fountains throughout the towns. To illustrate how even with such a supply pollution takes place through inadvertence: The Mallie's barrel at Ootacamund kept full under the tap will show what actually takes place in many houses there. The moral to be gathered from this is always—draw the drinking water direct from the tap. If you are doubtful regarding the purity of your drinking water, you should boil it, because boiling kills all the germs. In presence of an epidemic of cholera or typhoid fever, all drinking water should be boiled. The only filters which are of any use for domestic purposes are the Berkfield and Pasteur-Chamberland; but their candles or bougies should be taken out and boiled thoroughly twice a week which most people forget to do.

Hankmising a well.—During epidemics of cholera, much good has resulted from this method of treating wells. It consists in putting potassium permanganate in sufficient quantities to tint the water in the well a faint pink colour. Put in at night, the water is generally clear by the morning and the injurious polluting matter has sunk with the potassium permanganate to the bottom of the well.

Precautions to be taken by Sanitary Authorities.*

Sanitation of Closets, Yards and Streets.—Domestic attempts at cleanliness may be rendered inoperative by conditions outside the house, and it is most important that these conditions should receive attention from the Council. Unpaved streets and yards should, where necessary, be paved, and in particular, all accumulations of refuse in the neighbourhood of dwellings should be promptly and efficiently removed. These accumulations provide breeding grounds for flies and are otherwise open to serious objection.

* From a Circular issued by the Local Government Board.

It is therefore essential to the health of a district that there should be arrangements for the frequent removal of house, stable, and street refuse, and the contents of privies and other closets on the conservancy system, and for the disposal of refuse and excrement under sanitary conditions. But however carefully closets on the conservancy system are emptied and cleansed, the conditions associated with them in urban communities are generally a menace to the public health, and especially to the health of children; and the Board would urge that, wherever a sufficient sewer and water-supply are available, fresh water closets supplied with flushing cisterns should be substituted for existing closets on the conservancy system and provided in all new buildings.

Prevention of flies. *—The Board are advised that the exact share borne by flies in conveying the infection of epidemic diarrhoea cannot yet be stated. It would be a mistake, with our present knowledge, to assume that the problem of the prevention of this disease is limited to the destruction of flies. It is concerned also with the personal cleanliness of the mother who has to prepare the infant's food and with the cleanliness of the house, the backyard, the court, and the street, from which infective material may obtain access to the infant's food, with or without the intermediation of flies. But for practical purposes the number of flies in the summer months may be regarded in towns as a valuable index, under present conditions, of the possibilities of contamination of food by pathogenic microbes or by decomposing organic matter, especially in districts in which privies and pail closets persist, and in which accumulations of house refuse are permitted.

It should be remembered in this connection that the ova of the fly, when deposited on organic matter, may develop in hot weather through the various stages to the adult insect in little more than a week. Hence the importance of the frequent cleansing of receptacles for house refuse and manure above alluded to. For the prevention of flies it is essential to deal with their breeding places. Destruction of flies in a dwelling is, however, also an important additional measure, and may be secured by fly-traps, fly-catching papers, or in other ways. An efficacious method is the use of saucers containing

* From a Circular issued by the Local Government Board.

a solution of formalin (one teaspoonful to the half-pint of water) and a little sugar; a small piece of bread being placed in the saucer as a place for flies to alight on and drink. In living rooms these should be left out overnight, all other vessels containing fluid being removed or covered over.

Handbills advising domestic cleanliness, destruction refuse, &c., may usefully include directions for the destruction of flies.

CLEAN MILK.—A circular has been issued by the Birmingham Public health and Housing Committee calling attention to the necessity that farmers and others supplying milk should exercise care that the milk is free from contamination. The following are the methods that it is suggested should be adopted:—

(1) The cows and cowsheds to be kept clean; (2) all long hairs on udders and flanks of cows to be kept short by clipping; (3) cows' flanks to be damped with a brush, and their udders wiped clean with a wet cloth before milking to prevent dust and dirt from falling into the milk; (4) milkers to wash their hands with soap and water before milking, and to wear clean overalls; (5) a covered milking pail to be used with an opening in the side; and (6) the milk to be immediately removed from the cowshed into a clean dairy and passed through a strainer and cooled.—J. P.

MATERNITY AND CHILD WELFARE.—The following circular and memorandum have been issued to County Councils and Sanitary authorities by the Secretary to the Local Government Board:

I am directed by the Local Government Board to state that an estimate has been laid before Parliament for a grant to be distributed by the Board in aid of the expenditure of local authorities and voluntary agencies in respect of institutions or other provision or maternity and child welfare.

This grant, if voted by Parliament, will be made in aid of expenditure in respect of clinics, dispensaries or other institutions primarily concerned with the provision of medical and surgical advice and treatment, as well as in respect of the salaries of health visitors and other officers engaged for this work.

The Local Government Board have in recent years devoted considerable attention to questions connected with infant welfare and they have observed with much satisfaction that efforts have been made by many local authorities and voluntary agencies to deal with this matter. These efforts have undoubtedly helped to secure improved conditions for children and have played an important part in the campaign for the reduction of infantile mortality.

It is evident from the Reports issued by the Medical Department of the Board and those of many Medical Officers of Health that more extended and systematic measures than have hitherto been generally adopted are necessary, and it is hoped that the grant of assistance from the Exchequer will stimulate those local authorities who have not yet taken action to give the matter their earnest consideration and will encourage those already engaged in work to develop it still further.

Up to the present, local authorities, in their infant welfare work, have concerned themselves more especially with the child in its first year of life; the matter is, however, one which needs to be dealt with on a more comprehensive basis; and it is clearly desirable that there should be continuity in dealing with the whole period from before birth until the time when the child is entered upon a school register, i.e., the register of a public elementary school, nursery school, creche, day nursery, school for mothers, or other school.

Extension of the existing work is accordingly needed in two directions; on the one hand, it is necessary that measures should be taken for securing improved ante-natal and natal conditions, and on the other, provision should be made for continuing the work in relation to children beyond the first year of life.

The accompanying memorandum, which has been prepared by the Board's Medical Officer with a view to assisting the formulation of schemes or extending the work already undertaken, sets forth in outline the matters needing consideration in the preparation of a comprehensive scheme. It will be seen that the memorandum contemplates that medical advice and, where necessary, treatment should be continuously and systematically available for expectant

mothers and for children till they are entered on a school register, and the arrangements should be made for home-visitation throughout this period.

The work of home visitation is one to which the Board attach very great importance, and in promoting schemes on the line laid down in the accompanying statement, the first step should be the appointment of an adequate staff of health-visitors.

It will be desirable, at all events in the case of the larger urban authorities, to provide consultation centres which may fitly be termed maternity centres, to which expectant mothers and mothers with infants and little children may be referred for advice and treatment; the operation of these maternity centres will be rendered most effective if co-operation is secured with the midwives of the district and with any local hospital having a maternity department.

It will be necessary to arrange for a medical officer to be in charge of such a centre and for the attendance at the centre of members of the staff engaged in home visiting. Careful records, for which the medical officer should be responsible, will need to be kept, and in regard to children the records should be in such a form that they may subsequently be available for the information of the school medical officer when the child is entered at a school.

For the rural and smaller urban areas, the Board think it will generally be found desirable to develop a county organisation, but in all cases the county work should be intimately related with that of the local sanitary authority, and on the other hand any work separately undertaken by a sanitary authority should be co-ordinated with the county scheme.

It is now expected that all local authorities will be able at once to initiate complete schemes, but it is important that any partial arrangements that may be made shall be such as can ultimately form part of a more extended organization.

Subject to the estimate now before Parliament being accepted by Parliament, the Board will be willing to consider applications for grants in respect of any work falling within the scope of the scheme outlined in the memorandum accompanying

this letter; the grants will normally amount to one-half the approved expenditure on any of these purposes, but may be less if the Board so decide.

Grants to institutions of the nature of schools for mothers, the object of which is primarily educational which provide training and instruction for mothers in the care and management of infants and little children, and which may include systematic classes or home visiting, or infant consultations, the provision of specific medical and surgical advice and treatment, if any, being only incidental, will be administered by the Board of Education. Any cases of doubt or difficulty will be investigated by a joint committee of officers of the two Boards, which will include women medical officers.

In sending a copy of this circular to voluntary agencies engaged in infant welfare work, the Board will state that applications for grants in respect of voluntary work may be made by a voluntary agency either directly or through a local authority.

The grant now presented to Parliament will be appropriated in aid of the expenditure of the half-year ended 30th September 1914, and applications for grants should be accompanied by an account of the work undertaken by the authority, and by a detailed statement of the expenditure incurred, certified by the officer of the local authority in charge of the accounts.

I am to add that the Board will be happy to afford advice and assistance to local authorities in the initiation of schemes or the extension of existing schemes.

MEMORANDUM.—A complete scheme would comprise the following elements, each of which will, in this connection, be organised in its direct bearing on infantile health:

1. Arrangements for the local supervision of midwives.
2. Arrangements for—Ante-Natal.—

- (1) An ante-natal clinic for expectant mothers.

- (2) The home-visiting of expectant mothers.

- (3) A maternity hospital or beds at a hospital, in which complicated cases of pregnancy can receive treatment.

3. Arrangements for—

Natal.—

(1) Such assistance as may be needed to ensure the mother having skilled and prompt attendance during confinement at home.

(2) The confinement of sick women, including women having contracted pelvis or suffering from any other condition involving danger to the mother or infant, at a hospital.

4. Arrangements for—

Post-Natal.—

(1) The treatment in a hospital of complications arising after parturition, whether in the mother or in the infant.

(2) The provision of systematic advice and treatment for infants at a baby clinic or infant dispensary.

(3) The continuance of these clinics and dispensaries, so as to be available for children up to the age when they are entered on a school register, *i.e.*, the register of a public elementary school, nursery school, creche, day nursery, school for mothers or other schools.

(4) The systematic home-visitation of infants and of children not on a school register as above defined.

Road Making and Maintenance.

THE ROAD: ITS PARAMOUNT IMPORTANCE:—In the Chambers's Journal for December, 1914, the Right Hon. Sir J. H. A. Macdonald, K.C.B., LL. D., after emphasising the importance of road construction and maintenance, points out that statistics show that more power vehicles are being put upon the road in each successive season, and discusses the question of road making. He writes:—

It is satisfactory to know that it is in this country that the greatest advance has been made in the ascertainment of the best mode of road construction and road maintenance. It is possible now in many places to drive for many miles in the driest weather without there being any raising of dust. This in itself is a thing of great advantage in the direction of comfort to the road user and

roadside dweller, of prevention of deterioration of goods, and of maintenance of public health. But these, however satisfactory, may be called side-advantages only. If a road is dustless, it is not only satisfactory in these respects, but in this condition testifies in an unanswerable manner to the fact that it is not a road that materially deteriorates under traffic. Its dustlessness is a proof that the surface is not crumbling away, but remains practically intact and therefore impenetrable to water. Water is the most deadly enemy that the road has to encounter if once it can penetrate below the surface. While the roads which are exhibiting this efficiency were at a time of construction to a certain extent experimental, the period during which they have stood the test of traffic—already equal to from two to four years in many cases—has enabled the road engineer to gain further experience and by experiment to work out improvement, so that it can now be said with confidence that the formula for a durable, dustless, and economical road surface has been attained.

In former days the destruction of roads was caused by the penetration of water into the road crust in wet weather, and in the case of very dry weather following, by the failure of the stones used in making it to hold their positions without moving, and so loosening the body of the road-crust, and producing fatal disintegration. It was supposed by most people that the wear of the road was at the immediate surface only, whereas the actual injury caused by traffic not only affected the surface, but destroyed the entire roadcrust by causing movement of the stones in it far down below the surface. Examination showed that blows of the hoofs of the heavy cart-horse and of wheels wherever the surface was uneven, resulting in motion far down in the crust, caused the sharply broken stones which had been laid down to move, and by chafing one against another to become loose in their seats more and more, until they resembled potatoes, from their angles being rubbed off. The road thus ceased to have any cohesion, so that the surface could not remain even, any horse or vehicle squeezing mud up in wet weather, and picking or pressing the stones out of their seats in dry weather. And this disintegration, being irregular in its surface, caused depressions in which water could lie. Every one knows what is the state of an ordinary road shaded by trees for many days after a fall of rain.

All this, as regards the making or renewing of road surfaces or the construction of new roads, is a thing of the past. Investigation and experiment have made it certain that a road can be constructed at a reasonable cost which will be impervious to water, will keep its surface unbroken for a long time, and which at any point where it shows signs of giving way can be made perfect by patching, without the scriptural result of the new making the rent worse, as the quality of the patch and its surroundings will be practically the same. The lower crust of the modern road can be made so compact by the use of a well-proportioned binding material of ascertained quality that the mass is held firm, and cannot disintegrate by its pieces being moved and made to chafe to one another, so as to remove the sharply angled surfaces and reduce the crust to a non-cohering layer of rounded pieces. Also, it can be so made that water will not penetrate as it does into a road the only binding material of which is dirt. A stretch of such a road, after being under traffic for two years or more, will be found with every stone still in the exact position in which it was fixed at first laying; and so tenaciously are the stones held by the well chosen binding material that if a block cut out of the road is broken in two, it will be found that the stones are firmly fixed that when they break across, leaving one half fixed in each of the two pieces of the specimen of crust. No stronger testimony could be given to the excellence of the crust than this real evidence of the firm grip of the binder.

But another improvement has been developed. Just as a carpet placed on the floor prevents vibration and deadens sound, so in the case of important roads in city or county, combinations of bitumen with other materials are now used to put, as it were, a resilient carpet on the top of the resisting road-crust, with the effect not only of lightening the blows of the traffic and so protecting the material below, but also of diminishing noise, saving wear and tear of vehicles, their frames, their tires, and their springs, and giving a greater mileage per gallon of petrol than can be the case if the road at the surface is rigid and in measure uneven, as it must be when the crust is exposed to the direct stroke of traffic of all classes of vehicles. Such a superimposed surfacing acts exactly as does a carpet in a room. It is slightly depressed when pressure comes on it; but when left alone, or when pressure comes on the carpet close to the depression, the depressed part rises again into position.

A good turf is just an outdoor carpet. The foot of a man or horse depresses it, and thus it is relieved from hard going; the turf rises again either being pressed down at a point close to the former depression or by being untouched, and by its elasticity rising once more to the level. The bituminous carpet which can now be put upon a road acts as the elastic turf does on a lawn; it yields, although of course, in a slighter degree than the turf, and recovers, and so violence tending to destroy the weight-bearing crust is warded off. More durability is thus given to the body of the road and an impervious surface is maintained. It remains to be proved by time whether it will be economically efficient; but there is good reason to hope that roads covered with such a carpet, proportioned in thickness to the character of the traffic on the particular road, will last and remain in good order for a much longer period than has ever been the case hitherto, provided only that it is sufficiently inspected and any incipient injury is dealt with at once. The repair of the road carpet is easy, and if properly done, gives as good and smooth a surface as ever.

Street Cleaning by Electric Traction.

THE Aberdeen cleansing department under the superintendence of Mr. Alexander Findlay has introduced some interesting and useful devices for cleaning and watering the streets and removing snow by electric traction. For street-sweeping two of the department's large rotary brushes are fitted on to the electric street car. One of the brushes is placed immediately behind the car by means of a double stay attached to the drawbar of the brush. The second brush, which runs to the near side of the first one, is arranged in a more complex fashion by means of a bar which runs at right angles off the rear of the car for the purpose of drawing and keeping it running straight and is further controlled by a chain attached to the side of the bogie, and another chain back to the stay at the rear of the first brush. The full width that the brushes will sweep is fourteen feet, but this can be reduced, if necessary, to any width down to seven feet. The brushes were originally made for horse haulage, but the work is more expeditiously and thoroughly accomplished when they are

attached to the street car in the manner described. The sweeping is done in the morning before the ordinary car service begins. The electric watering car has a carrying capacity of two thousand gallons and is fitted with Warwick's patent water sprinklers two at each end of the car. The width of the spread of water is twenty-four feet and the flow of water can be regulated so as to make it light or heavy, broad or narrow. The cost of street-watering by electric traction is seven pence per mile, an estimated saving being effected of one shilling and six pence per hour as against watering by horse haulage.—*Cham. Jour.*

Drainage and Sewage Disposal.

OTACAMUND is still the only mofussil municipality in the Madras Presidency which has a comprehensive drainage scheme, but, we believe, the Municipal Council of the town has not taken full charge of the works, a portion being still in the hands of the Public Works Department. Proposals for improving this system are under consideration. Elsewhere progress has been slow, except in Madura and Vellore, where the sanctioned schemes have proceeded to execution. A scheme for the drainage of Rajamundry is being investigated by the Sanitary Engineer. In none of the other towns where sewage schemes have been accepted have the schemes advanced beyond the preliminary stages. The conditions as to sewage in municipalities is consequently very unsatisfactory and in need of speedy remedy. Government have declined, and very rightly, to make grants for the construction of isolated drains unless they formed part of a comprehensive scheme with sewage disposal works, etc. Drainage schemes, especially in towns provided with a piped water-supply, should therefore be expedited.



Electrolytic Treatment of Sewage.

THE economical, effective, and hygienic disposal of sewage is a problem of importance, as every community is required to dispose of sewage in an innocuous state. During the past few years many improved methods for dealing with this waste material have been devised, and the electrolytic treatment has recently received considerable attention. An English inventor has elaborated a system which, while simple and inexpensive to install, is thoroughly hygienic, and as power is generated during the treatment, it is also remunerative. The installation includes a tank called a regulator, divided longitudinally into two sections, which is placed at the outfall of the main sewer. Here a steel grating serves to arrest the passage of wood and other solid matter. Opposite this grating each section is fitted with a sluice-valve through which the liquid flows in a graduated stream. From the regulator the sewage passes over a wheel of over-shot or under-shot type to which a dynamo is coupled. In passing over the wheel the matter in suspension becomes broken up and then passes into the main tank where the electrolytic treatment takes place. The two compartments are charged with filter-plates, the filtering material being coke. In the first compartment there is a sump where the solid matter collects. The liquid passes into the second where it is subjected to an electric current transmitted from the power-house. The passage of the current completely sterilizes the liquid which in its purified state flows into another tank or balancer, where sufficient head is provided to enable it to gather force to drive a water-turbine which is coupled to generators in the power house and the liquid is then permitted to escape either into the river, stream or sea. The solid matter or fetid sediment which is collected in the sump is likewise rendered innocuous by the current and removed periodically. This sludge can be submitted to further treatment for the extraction of grease and other constituents, pressed and converted into fuel or put to other uses. The electrolytic action is so completely effective

in its sterilization that there is no danger of pollution from the liquid that is run off. The process has the great advantage that there is no possibility of secondary putrefaction. A combined sewage and power station is a somewhat remarkable combination ; it is an illustration of the ingenuity of modern invention.—*Cham. Jour.*

Sewage Farming.

SEWAGE farming is in force in 18 District Municipalities in Madras, but little improvement is noticeable either financially or otherwise in most of them. Municipal Councils seem to evince little interest in this profitable and effective method of disposing of the town sullage ; the farms are badly laid out and mismanaged. In many instances it is impossible to recognise the site as a sewage farm. No attempt at treatment is made except in Salem, where bacterial filters are used, and in Ootacamund, where disposal works connected with the sewerage system exist. In Vizagapatam, Tanjore and Ootacamund, the farms proved profitable concerns, but in most other towns they were either worked at a loss or the income was insignificant.

Motor Wagons.

THE Madras Corporation has four motor lorries which are mostly engaged in land reclamation work in connection with anti-malarial operations. Each lorry is $3\frac{3}{4}$ -ton 30 h. p. and costs Rs. 12,850 The manufacturers are the well-known firm of John Thornycroft & Co. The lorries were very serviceable in conveying water to the affected districts when the water mains burst during Christmas week.

The Calcutta Corporation recently sanctioned the purchase of three motor wagons and three trailers at an estimated total cost of Rs. 62,000 for the removal of refuse.

The acceptance of the following tenders was recommended and approved :—

I. The Daimler Co., Ltd.

(a) $\frac{5}{4}$ -ton 40 h. p. motor wagon	...	Rs. 12,621
(b) 4-ton trailer	... ..	„ 2,790

Total Rs. 15,411

II. Martin & Co. on behalf of John
Thornycroft & Co.

(a) 6-ton 40 h. p. motor wagon	...	Rs. 13,380
(b) 4-ton trailer	... ..	„ 3,255

Total Rs. 16,635

The question of the third motor to be purchased has been postponed until further details have been obtained by the Chief Engineer regarding the “Gairford” truck and petrol-electric wagons between which a selection will be made. It was contended that, for the success of the experiment, vehicles of widely divergent types should be selected.



Water Supply.

[One of the objects of the Local Self-Government Gazette is to bring together, by correspondence, the numerous Local and Municipal Institutions, so that they may be kept fully informed of what is being done in various places towards the advancement of civic life. Chairmen and Secretaries of Municipal Councils and Presidents and Vice-Presidents of Local Boards are invited to send us short descriptions of important schemes and projects undertaken by Local Bodies].

ERODE WATER SUPPLY SCHEME.

THE Government of Madras have sanctioned a 15-gallon scheme for the water-supply of Erode at an estimated cost of Rs. 3,99,000. Towards this cost Government pays a grant of Rs. 3,11,000 from Provincial funds, the balance being advanced as a loan for repayment in thirty years at 4 per cent per annum. The Public Works Department have taken up the work in hand, and a brief description of the main features of the scheme may be of interest to our readers.

Erode in the Coimbatore district is an important Railway junction, and a Municipality of growing importance. The Cauvery river runs $3\frac{1}{2}$ miles from the town. Its present population is nearly 17,000 and the average yearly rainfall, about 26 inches. The existing sources of supply are the Kalingarayan irrigation channel, which is usually closed during the months of April and May—and which is the chief source of supply—and a few wells in the “Fort” district of the town. Previous to the inauguration of the present scheme, two proposals were made. These are (1) the Cauvery scheme, (2) Kalingarayan canal scheme. In the former it was suggested that a pure and potable water could be obtained by an infiltration galley in the river bed. Subsequent experiments proved this to be impracticable. The second scheme was abandoned on the ground that the canal water was very highly contaminated.

PRESENT SCHEME.—The source of supply is the Cauvery river which is $3\frac{1}{2}$ miles distant from the town, but at a point where the river tumbles down a succession of falls into a deep

port. It is on the main Cauvery stream which is perennial with a large flow in the driest weather. The distance of the nearest village up-stream from the source is about 8 miles. The water will be pumped from the river at this point to a pumping station on the west or right bank of the river. At the latter place, there will be a subsidence and coagulating tank, and a mechanical gravity filter through which the water will be passed into a clear water well. From the latter, the water will be pumped again into a service reservoir (130 feet above the river) from which the water will be distributed by gravity to the town.

Description of the main features of the scheme.—The Intake Main will be 7" solid drawn steel pipe and will be fine mesh wire netting and laid 10 feet at least below the lowest ascertained surface level of the water.

The Subsidence and Coagulating Tank.—The pumping station has been designed to hold a few hours' supply. The river water pumped into this tank will be treated with sulphate of alumina. By this process a large proportion of the bacteria together with the suspended matter are gathered together and subsequently removed rapidly and easily by sedimentation and filtration.

Pumping Station.—The engines and boilers proposed are of the overtype superheated steam type with Worthington deep-well and high-lift pumps to suit.

Filter, etc.—The filter will be of the rapid gravity type and has been selected for the reasons that (1) it is the best type for dealing with water containing a large amount of sediment, (2) it is economical for small plants, (3) it is easily operated, and (4) it requires a smaller area than slow sand filters. In the latter, the large expense of acquiring land adds to the initial cost of the scheme, which renders its consideration prohibitive from a financial standpoint. The filter is 12 feet in internal diameter and is capable of filtering nearly 278,000

gallons per day. A small percentage—5% of the filtered water is used for cleaning the filter. The method of operating the filter is as follows:—

The raw water from the subsidence tank is admitted to the filter at the top. The sulphate of alumina in the water rapidly helps to form a scum on the top of the sand which filters the water. This operation continues for 23 hours, during which the water for the town and the wash water for the filter is pumped up into the service reservoir. The pumps are then stopped, valve on pumping main closed; and the valve from the latter main to the underside of the filter opened when the water rises under pressure in the filter loosens and washes the sand which at the same time is rapidly revolved by a mixer operated off the main shafting; when all the dirt has been washed out, the wash valve is closed, the sand allowed to settle and raw water re-admitted.

The Service Reservoir is situated on a hill known as the Padriparai and commands the whole of the town. It has been designed to hold eight hours' supply *plus* the wash water for cleaning the filter. The water from this reservoir gravitates to the fountains in the town.

Rising and Distribution Mains.—These will all be of weldless steel with spigot and faucet joints. The rising main is 8 diameter and 6,500 feet long. The distribution mains have been designed to take twice the average demand.

Fountains, etc.—There will be 58 fountains distributed throughout the town. Hydrants have re-placed scour valves in many places with a view to combining scouring and fire-protection. The town has been divided into three districts, the supply to each of which is checked by a Deacon waste-water meter.

The proposals are sound, and Erode may be congratulated on getting what will prove to be one of the prettiest and most successful water-supply schemes in the Presidency.

Notes of Cases.

(Important Cases will be fully reported hereafter.)

HIGH COURT, MADRAS.

SPENCER AND NAPIER, J. J.

December 22, 1914.

The Municipal Council of Kumbakonam v. Veeraperumal. Madras District Municipalities Act, Section 201—"Amends", meaning of—Necessity for Notice of suit.

In an action brought by the plaintiff for damages for unlawful interference with his right to remove rubbish sold to his brother by the Municipal Council, *held* that the word 'amends' does not mean compensation or damages and that no notice was necessary under Section 261 of the Act.

Government Orders and Announcements.

[MADRAS.]

SANITARY WORKS.—In G. O. No. 239 L. M., dated 27th November 1913, the Sanitary Commissioner was requested to make a thorough inspection of twenty-one towns therein named which had been backward in submitting schemes of sanitary improvement for allotments from the grant for minor sanitary purposes and to advise the Municipal Councils concerned as to what sanitary improvements of a non-recurring nature, suitable for an allotment from the above grant, were most urgently needed, so that the Councils might draw up proper plans and estimates for these, get them sanctioned by the proper sanitary authority and apply to Government for allotments where necessary.

2. The inspections of the Sanitary Commissioner and his Deputies made in accordance with that order have been productive of a series of most useful suggestions and these are now being converted into regular sanitary programmes for the towns concerned which the Councils can carry steadily through year after year as their own funds and the allotments made to them from the minor sanitary grant allow.

3. The Government now desire that the Sanitary Commissioner and his Deputies and the Chairmen of all Municipal Councils should work together to extend this system until there has been drawn up for every town an approved programme of sanitary works, sufficient for several years, for the various items in which the Councils can set themselves to prepare, in a systematic manner, detailed plans and estimates which should be sent at once to the proper authorities for sanction and thereafter to Government to be "noted for consideration" when the Provincial grant is distributed, so that when funds are available from any source, works on which they may at once be spent may be ready without any delay.

4. In accordance with G. O. No. 1129 L., dated 7th August 1912, most Councils have already drawn up sanitary programmes themselves and the Sanitary Commissioner has copies of these. He and his Deputies should take them into consideration whenever they inspect any municipality and report to Government how far they approve of the proposals in them, what other schemes they would suggest and what should be the sanitary programme of the town for the next few years. A copy of this report should be sent to the Council concerned which should forward it to Government with its remarks and conclusions. A formally approved sanitary programme will then be drawn up by the Government and issued and the Council should then proceed to work it out in detail in the manner described in the last paragraph.

5. In making suggestions, the Sanitary Commissioner and his Deputies should formulate them in as great detail as possible so as to give the utmost possible assistance to the Councils and save the time which is at present often lost by the Councils and the sanitary experts working at cross-purposes. The suggestions should include non-recurring expenditure only; proposals for increasing establishment or other recurring charges will be separately dealt with; expenditure on conservancy plant should be sparingly suggested and

grants will be given for it only in special cases as Councils should keep this plant up to proper standard from their own funds, setting aside some amount for repairs or renewals every year just as commercial companies do ; grants for clearing prickly-pear are not usually given by the Government and Councils must themselves find the money for this ; grants for markets, slaughter-houses and other works which bring in an income to the Councils are not usually given and such works should again be built from the Councils' own funds or from loans obtained from Government ; schemes for constructing drains will not be considered where a proper drainage scheme for the town is on the Sanitary Engineer's programme, nor where the drains do not lead to a sewage farm, the sea or some other place where their accumulations will not occasion a nuisance ; schemes for the relief of congestion should always be accompanied by proposals for providing house-sites for those who will be evicted by them ; proposals for improving or adding to medical or educational buildings are met from other grants and should not be included.

6. On the other hand, the Government will be ready to consider the question of giving grants to schemes of town-improvement which come within the term "sanitary" in its widest sense, such as the acquisition of land for town-extensions, for open spaces for recreation, for house-sites for the poor, for broader roads, for suburbs for the well-to do as long as they will arrange to repay the cost thereof, and the many other similar amenities which in other countries are usually the care of urban authorities.

[G. O. No. 1674 M., dated 2-9-14.]

GRANTS TO DISTRICT BOARDS.—The following grants from Provincial revenues represent the distribution of the customary subsidy intended to supplement the resources of the district boards and credit may be taken therefor in the budget estimates 1915—16 :—

Name of district board.						Amount of grant.
						RS.
Anantapur	...	...	...	...	...	26,359
Arcot, North	...	...	...	...	...	49,408
Arcot, South	...	...	...	...	...	62,830
Bellary	...	...	...	...	...	46,290
Canara, South	...	...	...	...	...	1,11,778
Chingleput	...	...	...	...	...	48,108
Chittoor	...	...	...	...	...	38,455
Coimbatore	...	...	...	...	...	53,602
Cuddapah	...	...	...	...	...	31,620
Ganjam	...	...	...	...	...	87,487
Godāvari	...	...	...	...	...	1,29,219
Guntur	...	...	...	...	...	1,11,484
Kistna	...	...	...	...	...	1,48,642
Koraput	...	...	...	...	...	10,736
Kurnool	...	...	...	...	...	36,020
Madura	...	...	...	...	...	51,152
Malabar	...	...	...	...	...	1,56,121
Nellore	...	...	...	...	...	69,847
Nilgiris, The	...	...	...	...	...	3,167
Ramnad	...	...	...	...	...	55,675
Salem	...	...	...	...	...	42,959
Tanjore	...	...	...	...	...	1,14,062
Tinnevelly	...	...	...	...	...	56,815
Trichinopoly	...	...	...	...	...	60,503
Vizagapatam	...	...	...	...	...	90,387
Total						16,92,726

2. The above distribution is arrived at by giving each district board one-fourth of its receipts from the land-cess collected at the rate of one anna in the rupee of the land

revenue and allotting the taluk boards in South Canara and Malabar, in addition, a further grant equal to the income they derive from the levy of the cess at rates above one anna.

The additional grants payable to the taluk boards in these districts and included in the allotments shown in paragraph 1 are as follow :—

South Canara—						rs.
Coondapoor	...	...	...	...	...	33,318
Mangalore	...	...	...	...	...	15,432
Puttur	...	...	...	...	...	25,769
Total ...						74,519
Malabar—						rs.
Tellicherry	...	...	...	...	...	33,522
Calicut	...	...	...	...	...	6,100
Palghat	...	...	...	...	...	37,288
Malappuram	...	...	...	...	...	14,896
Wynaad	...	...	...	...	...	8,567
Total ...						1,00,373

[Order No. 1914 L., dated 27th October 1914.]

GRANTS TO MUNICIPAL COUNCILS.—Out of the provision of 25 lakhs made in the Civil Budget Estimate for 1914-15 for grants to local bodies for minor sanitary works, a sum of Rs. 23,48,418 has already been allotted. The balance of Rs. 1,51,582 will now be distributed among the municipal councils mentioned below for the sanitary works specified against each. The Accountant-General will be requested to place the amounts at the disposal of these councils at an early date.

Name of Municipality.	Works for which the grant is intended.	Amount of grant.
		Rs.
1. Vellore ..	(1) Provision of type-design latrines ..	19,000
	(2) Opening up of the Fishermen's blocks (Nos. 18 and 24.)	47,611
Total ..		57,611
2. Cuddapah..	Construction of sheds for totis ..	18,360
3. Chicacole..	Construction of two latrines ..	3,000

4. Parlakimedi	.. (1) Acquisition of the locality occupied by Kondras, Paidis and Ghasis and the provision of accommodation for them with roads, drains, latrines, etc., (additional allotment)	17,800
	(2) Construction of huts for totis ..	20,341
	Total ..	38,141
5. Masulipatam	.. Acquiring and filling up low places—	
	(1) Near the site acquired for the Thashamarpa people.	6,900
	(2) In front of Chintavaru's house in Godugupeta.	1,400
	(3) Near Chalikonda Sriramulu Nayudu's house.	750
	Total ..	9,050
6. Negapatam	.. Provision of conservancy depôts at Negapatam and Nagore.	16,220
7. Palamcottah	.. Improvement of the Mulikkulam tank..	9,200
	Grand total ..	1,51,582

[G. O. No. 2336 M., dated 30-11-14.]

LOAN TO THE CORPORATION OF MADRAS.—With the previous approval of the Government of India the application of the Corporation of Madras for permission to raise a loan of Rs. 3,00,000 in the open market has been sanctioned under the Local Authorities Act, 1879, for the following purposes:—

- (1) Construction of Model Elementary School buildings (Rs. 1,05,500.)
- (2) Acquisition of land near Suparigunta Paracheri and the construction of model houses thereon, (Rs. 64,500), and
- (3) Extension of Electric lighting (Rs. 1,30,000.)

[G. O. No. 2588 M., dated 26th December, 1914.]

GRANTS TO PRIVATE DISPENSARIES:—The Madras Government have sanctioned the grants proposed to be paid by the Corporation of Madras to the Sri Kanyaka Parameswari Devasthanam Dispensary and Venkataramana Dispensary, Mylapore, without any conditions.

[BOMBAY.]

CONTRIBUTIONS TO GOVERNMENT FOR SERVICES PERFORMED BY ITS OFFICERS TO LOCAL BODIES :—The Bombay Government have issued the following press note :—

For some time past it has been under consideration whether District Local Boards could be relieved of some of the contributions which have hitherto been made by them for services performed on their behalf by officers of Government. The general principle laid down for guidance was that these charges should be remitted in all cases where a Local Board contributes to Government for services inherent in the duty of supervision and control by Government officers, or for services which cannot be expediently performed except by Government agency. Local Boards should, however, continue to pay for the services of officers borrowed from Government for work which is incumbent on them by law. Thus, it was ruled that Government might properly cease to charge for clerical establishments in the offices of supervision and control and for the collection of district cesses which it is clearly expedient to realise along with the Government revenue. But at the same time Local Boards should not be relieved of payments for assistant surgeons on the Government cadre, who are employed under their orders.

Local Boards have never paid any part of the salary of the executive revenue officers, although the Collector, his Assistants and Deputies and his Mamlatdars devote a considerable amount of time and energy to their concerns. But they have hitherto contributed to the cost of the local fund establishments in the offices of Commissioners and Collectors and of Educational Inspectors and Deputy Educational Inspectors. The total amount of these contributions averages Rs. 1,06,738 per annum. His Majesty's Secretary of State has now sanctioned the remission of these charges with effect from the year 1914-15. A careful investigation has shown that Local Boards make to Government no other contributions which can be remitted in accordance with the principle above stated.

Legislative Intelligence.

[BENGAL.]

THE Hon'ble Rai Radha Charan Pal Bahadur asked whether the Hon'ble Mr. Payne had been appointed as a special officer to examine and report upon proposals connected with the amendment of the Calcutta Municipal Act, III of 1899, whether, if so, he had submitted his proposals for its amendment, and whether Government had come to any decision on the proposals.

Government replied that the Hon'ble Mr. Payne had been placed on special duty in connection with the amendment of the Calcutta Municipal Act, 1899, and that he had made certain suggestions to Government but had submitted no formal report.

In answer to a further question asking for certain particulars regarding the nature of the proposals, Government replied that they were not prepared to give any further information at that stage regarding the proposal to amend the Calcutta Municipal Act.

[MADRAS.]

CALICUT MUNICIPALITY :—The Hon'ble Mr. K. P. Raman Menon asked whether the Calicut Municipal Council passed a resolution recommending to Government that the proportion of elected members be raised from 12 to 18 out of a total strength of 24 ; and whether if the Government vetoed the suggestion the reasons could be stated for not accepting the resolution.

Government answered that the recommendation was vetoed as no adequate reason was apparent for making any change, the council itself having been equally divided on the question.

APPOINTMENT OF MUNICIPAL COUNCILLORS AS HONORARY MAGISTRATES :—The Hon'ble Mr. B. V. Narasimha Aiyar asked whether Government would consider the desirability of deleting the exemption clause in Rule 17, cl. (d) of the Rules for the election of Municipal Councillors.

Government answered in the negative.

APPOINTMENT OF NON-OFFICIAL PRESIDENTS OF TALUK BOARDS :—The Hon'ble Mr. B. V. Narasimha Aiyar asked whether Government would appoint at least one non-official as President of a Taluk Board* in the Coimbatore District.

Government answered that it was desirable to watch the results of the experiment before further extending it, and that if any such extension was decided upon, the claims of the Taluk Boards in the Coimbatore District would receive full consideration.

REVISION OF THE MADRAS LOCAL BOARDS AND DISTRICT MUNICIPALITIES ACTS, 1884 :—The Hon'ble Mr. B. V. Narasimha Aiyar asked when Government expected to introduce Bills to amend the Madras Local Boards and District Municipalities Acts, 1884; and Government replied that the amending Bills would be introduced about November 1915.

CORRUPT PRACTICES AT MUNICIPAL ELECTIONS :—The Hon'ble Mr. B. V. Narasimha Aiyar asked whether Government would consider the desirability of putting down bribery in Municipal elections by including in the proposed amendments to Municipal Acts provisions rendering bribery and other corrupt practices offences.

Government answered that the necessity of legislating to check corrupt practices at elections generally were under their consideration.

CHOLERA IN MADRAS CITY :—The Hon'ble Mr. Kunhiraman Nayanar asked :—

With respect to the outbreak of cholera last month in the city of Madras, will the Government be pleased to give information on the following points :

- (a) the cause or causes of the outbreak ;
- (b) the exact extent of the mortality up to the present time due to cholera alone ;
- (s) the nature and extent of the measures adopted to stamp out the disease ; and

* There are 5 Taluk Boards in the Coimbatore District.

- (d) whether it is a fact, and if so why, that cholera often appears in the city during the first half of the last six months of every year?

Answer

- (a) The causes cannot be given with any certainty but an important contributing factor is believed to have been the introduction of infection from outside the limits of the city.
- (b) There were 2,110 attacks and 1,577 deaths between 15th August and 7th November last.
- (c) A special staff of nine cholera inspectors and 47 menials was employed in addition to the ordinary sanitary staff to attend to the following duties:—
- (1) Isolation of infected persons,
 - (2) supply of medicines and disinfectants,
 - (3) supply of drinking water in barrel-carts where water was scarce,
 - (4) destruction of unwholesome fish and suspicious food-stuffs exposed for sale in markets or elsewhere and the proper conservancy of markets,
 - (5) disinfection of wells, latrines, dustbins and drains and of houses where there were attacks, and
 - (6) destruction of rubbish.
- (d) Cholera frequently appears in the city between July and September, but the Government are unable to say with certainty why this is so.

MALABAR DISTRICT BOARD AND RAILWAY CESS :—The Honble Mr. Kunhiraman Nayanar asked why, when other District Boards were encouraged in the construction and financing of Railways, the Malabar District Board was not invited to levy the railway cess.

Government answered that they always left it to the Boards themselves to take the initiative in the matter of levying the Railway cess and undertaking Railway projects.

PROVINCIALISATION OF LOCAL FUND ENGINEERING SERVICE :—The Hon'ble Mr. C. V. S. Narasimha Raju asked if the Government would consider the desirability of provincialising the Engineering Establishment of the Local Boards after consulting the wishes of the Local Boards on the subject.

Government answered that they were not prepared to consider the proposal.

OFFICIAL CANDIDATES AND VOTERS: DISTRICT BOARD ELECTIONS :—The Hon'ble Mr. A. V. Krishna Rao asked if Government have come to any conclusion on the question of prohibiting officials from voting at elections to District Boards and also on the question of prohibiting Tahsildars and Village Munsifs from standing for election to District boards.

Government answered that it was decided that there was no sufficient reason to modify the rules in the manner suggested.

JOINT OWNERSHIP OF BRANCH RAILWAYS BY DISTRICT BOARDS :—At a meeting of the Madras Legislative Council held on the 20th November 1914, the Hon'ble Mr. K. Rama Aiyangar moved the following resolution:—

'This Council recommends to the Governor in council that the Government may advise and help District boards that have levied or are willing to levy Railway cess to form themselves into companies to work joint railway lines, on schemes to be laid down by Government, when such lines pass through the jurisdiction of more districts than one: and may also arrange to provide the capital for such companies out of the funds pointed out by the Government as available during the last budget discussion or by advancing loans to them as is done for other purposes by Government.

'This Council further recommends that the Dindigul-Palghat line now under the consideration of Government may be worked on these lines jointly by the District Boards of Madura, Coimbatore and Malabar.'

The Hon'ble Rao Bahadur B. N. Sarma who had given notice of a similar resolution moved the following amendment:--

'This Council recommends to the Governor-in-Council that the Government may advise and help, by undertaking the necessary legislation or otherwise, District Boards that have levied or are willing to levy Railway cess to own and work joint railway lines and to form themselves into companies to work joint railway lines, on schemes to be laid down by Government, when such lines pass through the jurisdiction of more districts than one; and may also arrange to provide the capital for such companies out of the funds pointed out by the Government as available during the last budget discussion or by advancing loans to them as is done for other purposes by Government or by giving them the necessary borrowing powers subject to the control of the Government.

'This Council further recommends that the Dindigul-Palghat line now under the consideration of the Government may be worked on these lines jointly by the District Boards of Madura, Coimbatore and Malabar.'

The alteration was agreed to by the Council, and after a long discussion, the amended resolution was put to vote and lost.

Recent and Forthcoming Publications.

LUMLEY'S PUBLIC HEALTH, 8th edition, by Alexander Macmorran and Joshua Scholefield: Messrs. Butterworth and Co. Price £3-15.

MUNICIPAL CORPORATIONS IN BRITISH INDIA, 3 vols. By P. Duraiswami Aiyangar. Price Rs. 20.

MUNICIPAL LIFE AND GOVERNMENT IN GERMANY. By William Harbutt Dawson, Messrs. Longmans, Green & Co. Price 12s.6d.

CITIES IN EVOLUTION. By Prof. P. Geddes. Messrs. Williams and Norgate. In the Press.

TOWN PLANNING with special reference to the Birmingham Schemes. By George Cadbury, Jun., with diagrams, photographs, charts and maps, Longmans, Green & Co. In the Press.

PRACTICAL TOWN PLANNING. By J. S. Nettlefold, with diagrams.

WATER SUPPLIES : their purification, filtration and sterilisation. By Samuel Rideal, with 24 plates. 7s. 6d. net.

THE CONTROL OF WATER as applied to irrigation, power and town water-supply purposes. By Philip A. M. Parker. Illustrated. Price \$ 5'00.

NEW TIME SAVERS IN HYDRAULICS AND EARTHWORK. By C. E. Housden, late Superintending Engineer, Public Works Department, India, with illustrations. Price 3s. net.

EARTH ROADS. By Charles E. Morrison. With diagrams Price 50 Cents.

The elementary principles of the construction and maintenance of earth roads are here presented. Location, cost, traction, grades, soil conditions, drainage, width of roads, etc., are among the subjects covered.

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Practical Points.

[The questions of subscribers only are answerable in the Gazette. The name and address of the Subscriber must accompany each communication which must be legibly written.]

1. Waiver of notice : Defence to a Criminal Prosecution.

A Municipal Council gives notice to A calling upon him to close a well with clean sand or debris, as it considers that the well is in an insanitary condition. A requests the Council to allow him to retain the well. The Council thereupon informs A that if the well is covered with a Cuddapah slab and a hand-pump is provided, it will not insist on the well being actually closed. A, however, does not cover the well and is prosecuted for not filling up the well. A pleads that the notice has been waived and that the prosecution must fail. Is his defence valid?

Answer.

A has a good defence. Where after the service of a notice, negotiations ensue, such negotiations are tantamount to a request by the party served with the notice, and a consent by the Municipal Council, to reconsider the matter and will have the effect of waiving the notice. (See *Hughes v. Metropolitan Ry. Co.*, 2 App. Cas. 439; *Emp. v. Nadirsha*, I.L.R., 29 Bom., 35). There is, however, nothing to prevent the Council from issuing a fresh notice after the negotiations are closed.

2. Interference with the option of the owner or occupier, illegal : Notice should comply with the Statutory Provisions.

A Council is empowered by the statute creating it to call up owners of land which is likely to become a resort of

idle and disorderly persons or become a nuisance, to secure, enclose, clear or cleanse the same. The Council calls upon the owner to construct a masonry wall around the land. Is the owner bound to comply with the requisition?

Answer.

The requisition is invalid and need not be complied with; where option is given by the Legislature to the owner or occupier to adopt such measures as he pleases to carry out the demands of the local authorities, it is not open to them to prescribe their own measures and to deprive the owner or occupier of the option given to him by statute. (*Emp. v. Sadanand*, I.L.R., 8 Bom., 151.)

3. Acquisition of land by private agreement, whether valid.

A Municipal Council is authorised by statute to acquire land for the purpose of widening a public street. The Council, instead of acquiring the land required under the Land Acquisition Act, proceeds to negotiate with the owner for acquiring the same. The ratepayers insist on the land being acquired under the Act and threaten to file a suit against the Council for restraining it by an injunction from acquiring the land privately. Have the ratepayers any cause of action?

Answer.

It seems that the ratepayers have no cause of action. Where a Council is empowered to acquire land, it may do so by private agreement and is not bound to have recourse to the Land Acquisition Act (*Ency. of L. & Law*, Vol. I, p. 120).



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Co-Operative Building Societies as an aid to Sanitation.

[BY THE HON'BLE DIWAN BAHADUR
L. D. SWAMIKANNU PILLAI, M.A., B.L., LL.B.,
REGISTRAR OF CO-OPERATIVE SOCIETIES, MADRAS.]

CO-OPERATIVE Building Societies are formed for the purpose of affording facilities for poor men and men of moderate means to own houses. These categories include a very large number of men, because a man whose means may be so ample as to enable him to live in comfort in a rented house will very often find that the same means will be unequal to his owning a house to live in. Conditions of civilized life in all countries tend to raise the rent of houses far more rapidly than the price of other commodities and it is a matter of common knowledge and experience that in almost every town in India that one could name, house rent has doubled within the last thirty years ; and where it is now difficult for men of moderate means to own houses in towns, it may well nigh become impossible for them to do so after the next thirty years. It would therefore seem that the present is an opportunity that may not occur again for forming Building Societies in towns.

But Building Societies do not merely meet the present conditions of town life in India for men of moderate means. Everywhere the complaint is that the poor are being compelled

to live in smaller and smaller houses. As the room for healthy life dwindles till the poor man's house almost becomes a galley slave's cell, disease, especially epidemic disease, acquires an ever increasing hold on what are called the slums of our cities and towns, and local authorities are compelled to consider schemes for thinning down congested areas by acquiring insanitary wards and streets, and rebuilding the houses or obliging their owners to rebuild them elsewhere. The process merely hands over the poor from one rackrenting landlord to another, unless means be found at the same time to place the evicted poor in houses which they can call their own. An insanitary house which is closed is probably worth only a quarter of what a decent house for the same class of dwellers would cost and not all the ingenuity of municipal administrators can substitute a 400 rupees house for a hundred rupees one without drawing the extra Rs. 300 from somebody else's pockets.

Fortunately, Co-operation can step in to solve this apparently hopeless problem. Co-operation has shown that the poor have a source of credit, hitherto unused, in their honesty and capacity for work. The reserve store of the individual's energy, *i.e.*, the energy to be put forth *in future*, on the strength of which he can raise a *present* loan, is not of great value, if we take only one individual since it is liable to be affected by the uncertainty of life, health and employment; but if ten men offer their reserve energies together, that is a good and valuable asset, since the chances of any of them losing life, health or employment may be adequately estimated and allowed for.

What becomes of the *Co-operative Credit on an unlimited liability basis*, which is the ordinarily accepted name of this putting together of the reserve energies of several men? It may be used for multiplying the available material for labour, just as the merchant or tradesman uses his credit for enlarging his working capital and it should certainly leave a larger

surplus income at the disposal of the wage earner. Building Societies for the poor are one way of utilizing the additional income or savings created by co-operative credit. It may seem a farfetched way of solving the problem with which we started, viz., how to create three times the life-room that exists at present in congested areas, but the art of building up great edifices out of little units is itself Co-operation and such results can be achieved, as the world knows, by patient trial.

This is not by any means the whole duty of Co-operative Building Societies. We said above that life-room tends to become dearer and dearer in towns and cities and it would seem that Co-operative Building Societies must rapidly get beyond the sphere of possibility. There are forces, however, which must always counteract this contraction of life-room, and among them are the facilities afforded by railways, tramways and cheap transit for the population to get away from the area of constriction, and to distribute themselves in suburban areas. To those anxious to avail themselves of these increasing facilities and to acquire more life-room, Co-operative Societies are invaluable since they afford the means of acquiring large sites in easily reached suburbs and of creating the ideal garden city of the future. These Co-operative Building Societies accomplish their objects (1) by collecting funds and lending them to members who wish to purchase or build houses; (2) by buying and owning lands for being parcelled out to members who wish to construct houses thereon and (3) lastly, by erecting buildings on sites so purchased and selling buildings ready for habitation to members.

The wage earner or small salary earner can with difficulty save a few rupees per month; but this is very different from his commanding capital to build a house worth Rs. 500 or Rs. 1,000. A Co-operative Building Society does this for him. It pays on his behalf for a house or a garden or a piece of land in lump and he agrees in return to repay the interest on the amount so advanced as well as the amount itself by easy

monthly or annual instalments extending over a long term of years. A Co-operative Society undertaking to finance a number of would-be-house-owners in this manner will have to borrow on a large scale; and the first condition of its existence is that cheap capital should be at its command. The members will have to pay to the society a rate slightly higher than what the society pays. Thus, if a clerk drawing Rs. 50 *per mensem* wants a house worth Rs. 1,000, the first condition of the problem is whether he can get the money cheap enough to enable him to pay interest on it every month *plus* an adequate instalment whereby the debt can be extinguished in 10, 15 or 20 years. To meet 9 per cent. interest *plus* instalment, the clerk would have to put by at least Rs. 10 *per mensem*, in which case the debt would be extinguished in about 20 years. If he cannot save so much, he will have to find a Building Society that can raise money on cheaper terms than societies can at present in this Presidency. A Society for lending money to intending builders is an elementary form of a Building Society; in fact, it is only a credit society which lends to its members for the one purpose of buying or constructing houses. Many Building Societies in Great Britain are usually formed on this principle. No more need be said in regard to them than about ordinary Credit Societies of which a description would be out of place in this paper.

A more advanced form of Co-operation is practised by Societies that purchase land and parcel it out to members for building purposes. And a still further stage is reached when Societies undertake, in addition to purchasing sites, to build houses on behalf of members. Such a Society requires in the members a large amount of business capacity to manage their own affairs and also a considerable amount of mutual trust. On the other hand, members will also get the extra profit that results from the joint purchase of land and materials for the construction of houses. A Society of this kind will have to raise a large share capital which should bear a considerable proportion to the total cost of the site and the buildings thereon.

How IS A SOCIETY TO BE FORMED ? A number of persons, not fewer than 10, who wish to own houses and who have confidence in each other should join in an application for a Society. The application should be sent to the Registrar in the forms prescribed which can be had from the Registrar or one of his Assistants. The applicants should also have the means to raise some capital for the business ; and the minimum contribution for each man should be at least what is required for purchasing a house site. If the Registrar considers that there is a reasonable chance of success and if he approves the by-laws which the organizers have framed for themselves, he will register the Society. One essential condition for the formation of a Society of this description is the existence of a number of intelligent and earnest workers who are prepared to devote their best energies for the cause of the Society ; in the absence of such men, such a society cannot exist.

The rule enforced in other Co-operative Societies, that the members should belong to a single village or town is usually relaxed in the case of a Building Society, because its members may wish to own houses at a distance from their usual place of residence either for reasons of health or for the education of their families or some other good reason. It would be hard to impose any disability on them by reason of their remoteness of residence.

How THE SOCIETY IS EXPECTED TO WORK : Apart from collecting sufficient share capital wherewith to buy or enable members to buy sites and materials for houses, a Building Society will do well to raise deposits from its members and others, chiefly from members. The number of houses that can be put up by a Building Society in the course of a year may not exceed 10 or 12 ; but as there should be several hundreds of members to make a good Building Society, those who have no immediate prospect of having houses built for them by the Society should make monthly deposits in the meantime which will give the Society continuous occupation and will relieve it from the necessity of borrowing

large sums of money elsewhere. The money obtained by means of share capital, loans and deposits can be used by the Society either for building on behalf of members or as a loan to members for the purpose of constructing houses. Loans are granted on the security of the site allotted as well as of any buildings that may be erected thereon. Members will be required to repay the amount with interest in a number of years, generally 15 to 20; so that the instalment which each will have to pay every month will be quite small. Ordinarily, the purchase of a house is in the case of a poor man either an impossibility or it involves many years of self-denial for himself and his family; and he can secure the fruit of his privations only at the far end of his life. A Co-operative Society anticipates this, gives him the house immediately and lets him pay in easy instalments spread over a great length of time. He would not have to pay every month more than perhaps 2% of the value of the house. Whether the Society builds for its members or its members build for themselves, they should invariably agree to conform to certain rules; *i.e.*, that they will build on sanitary lines, that they will not inconvenience their neighbours and that they will conform to whatever other rules may be framed hereafter for their common convenience. They also stipulate that a certain proportion of the profits should be devoted to some object of general public utility recognized by the Charitable Endowments Act. They may, for instance, have a small school, or a reading room out of the profits. It is a fundamental principle of a Co-operative Society that only honest men should be admitted as its members. In a Building Society it may be presumed that the managing body will exercise special care in the choice of members. A Society thus formed may bid fair to be a happy Co-operative colony where the rule of conduct will be

“ Each for all, and all for each
Helping loving one another.”

Artesian Boring at Cochin *

[BY HORMUSJI NOWROJI, B.E., A.M.I.C.E.,
DEPUTY SANITARY ENGINEER, MADRAS.]

COCHIN is situated on a narrow belt of land, with an almost continuous length of 120 miles breasting the Arabian Sea and separated from the main land by a backwater of equal length and a width varying from a few hundred yards to 6 miles. This belt of land is very little elevated above sea-level and the back-water is as much as 30 feet deep at the estuaries, adjoining one of which Cochin lies.

The water in the deeper layers of the belt is brackish. Some rain water accumulates in natural cups or basins, in the clayey stratum below the superficial layer of sand which forms the only sweet water available in Cochin. But the water is very unwholesome which is the natural consequence of a subsoil polluted for centuries by the sewage and filth of a whole town which is innocent of any system of drainage.

In 1894, an attempt was made to obtain a supply of potable water by an artesian boring. A boring lined with 8 inch steel tubes was made. Unfortunately, just as the boring attained a depth of 325 feet, there was an accident to the boring rod and it was found impossible to continue the boring. It was then proposed to withdraw the tubes and to re-sink them on another site. The Government, however, considering that an authoritative assurance of the likelihood of success was necessary before more money was sanctioned for an artesian boring, referred the above proposal to the Director of Geological Survey for remarks. This Officer (Mr. C. L. Griesbach, C.I.E., F.G.S.) in expressing his opinion did not deny the possibility of obtaining a pure supply of fresh water by a deep boring but asserted that such water stratum may possibly be thousands of feet below the surface. The

* A paper read at the second Indian Science Congress.

Government were naturally reluctant to spend more money on a scheme the result of which was considered so problematical.

About two years ago the necessity for a further attempt to discover a deep seated supply of pure water for Cochin was again urged by the Sanitary and local authorities. His Excellency Lord Pentland's Government, being satisfied of the necessity for this undertaking, sanctioned a deep boring of 1000 feet at an estimated cost of Rs. 33,000, the whole of which amount has been generously provided by Government. The new boring has reached a depth of 325 feet, which is also the depth attained by the first boring. The new boring is only 50 feet away from the old boring; and, as might naturally be expected, there is not any striking difference in the soils traversed.

A question has often been asked, especially by those who have not had the opportunity of carefully perusing the voluminous mass of correspondence relating to the Cochin water supply, whether there was anything in the results of the last boring, as far as it was made, which gave any indication at all of the probability of discovering sweet water in Cochin at a depth of 1000 feet. The answer is that there was such an indication. Otherwise, the present undertaking at a large cost would not be warranted. It is a recorded fact that in the old boring the water met with was brackish to a depth of 300 feet, but after passing that depth the quality of the water changed; and in the last stratum of water tapped by the boring, there was no trace of salt. Apparently, the influence of the sea and the back-water on the subsoil ceases at a depth of 300 feet. There is also proof of a circumstantial nature that a layer of sweet water of some considerable volume was passing under the belt on which Cochin stands. The coast line of this strip of land presents a phenomenon during the monsoon which is of much interest to mariners, geologists and engineers. It is the formation of what are termed "mud banks" along the coast and the action of these mud banks in creating

smooth water anchorages. The formation of the mud banks has been ascribed to mud ejected from under the sand by the hydraulic pressure of the backwater, the level of which is during the monsoon several feet above sea level. It was conjectured that there were subterranean passages or veins filled with soft mud connecting the back-water and the sea and that when the level of water in the former was higher, the mud was forced out into the sea.

Records of the
Geological Survey of
India, Volume
XVII, Part I, 1884.

Mr. Crawford, the then Commercial Agent at Aleppey, in discussing the origin of the mud banks (1860), admitted the influence of the backwater in this formation, but thought that it was only partially so. The principal source of active communication, he thought, was more in land and the back-water perhaps only an auxiliary.

It has been stated by various writers that the water over and around the mud banks becomes considerably freshened during the monsoon even to the extent of being drinkable and at such times ships can take in water alongside. This circumstance supports Mr. Crawford's theory of an inland communication. If the mud banks were due solely to the influence of the backwater, the freshening of the water over the mud banks would not be satisfactorily accounted for because the lagoon is salt.

The borings, as far as they have been made, lend support to Mr. Crawford's theory of inland communication. The soil traversed by the tube consisted of several layers of loose slushy sand between layers of clay and when the tube penetrated this loose slushy strata, the soil rose in the tube often to a height of 200 feet. Layers of such loose and flowing soil were encountered down to the depth of 325 feet. Unless there be huge shafts in the bed of the back-water, which descend vertically—a state of things which is highly improbable—the water in the lagoon can have no influence on the subsoil at a depth of 325 feet under a strip of land in close proximity to it.

The area which contributes the subterranean supply which is flowing to the sea under Cochin is about 2500 square miles forming the watershed of the Alwaye river. The subsoil consists, in order of ascension, of gneiss, laterite and recent deposits. It is popularly believed, for good reasons, that there is a very copious flow of water where the laterite and gneiss meet. The laterite is of spongy texture and the gneiss itself is well laminated and doubtless contains large cavities which form basins of water which finds its way to the sea through fissures in the rock. In the higher plateaus of the valley, the laterite covering averages only about 100 feet in depth. The maximum depth of some wells in the laterite which have touched the gneissic substratum is 140 feet. Where the valley opens to the sea, it is comparatively flat and the gneiss is at a considerable distance below the surface. There are many indications that the low lying country along the Malabar Coast was originally some hundreds of feet (one authority says 500 feet) below its present level and that it was gradually raised to its present level by sedimentary deposits due to the denudation of the Western Ghats. The borings have established the existence of alluvial deposits to a depth of 325 feet.

There are sufficient indications of a large body of water passing from the basin of Alwaye towards the sea and under the sandy belt on which Cochin stands. The assumption is warranted that the porous layers nearest the gneissic formation contain an abundant and pure supply of water.

The following statement gives particulars of the soil met with at various depths:—

BORING AT COCHIN.

Thickness of strata.	From	To	Description of Soil.
4 feet.	Surface.	4	Ferruginous and calcareous quartz sand.
26	4	30	Fine white sand with shells.
2	30	32	Black mud calcareous.
11	32	43	Sand darkened by carbonaceous matter and containing shells of lamelli branches.
51-6	43	94-6	Dark mud with fragments of shells.
5-6	94-6	100	Fine calcareous sand.
5	100	105	Mixture of dark clay and sand.
23	105	128	Black clay. Band of shells at 120-125.
10	128	138	Light colored clay with sand grains.
10	138	148	Dark colored clay with sand grains.
12	148	160	Coarse gravel.
8	160	168	Carbonaceous clay.
12	168	180	Clay becoming sandy at base with tubes of pyrites.
13	108	193	Sand and gravel (wellrounded).
7	193	200	Clay with pyrites tubes.
10	200	210	Black clay with pyrites tubes.
5	210	215	Black carbonaceous clay.
10	215	225	Black carbonaceous clay, sandy.
35	225	260	Dark clay with resin in upper layers.
30	260	290	Coarse round gravel.
10	290	300	Dark colored coarse sand mixed with clay.
25	300	325	Coarse grey sand with pyrite twig probably not <i>in situ</i> .

The Corporation of Madras.

[BY RAO BAHADUR V. ALWAR CHETTY, B.A.,
PROVINCIAL FOREST SERVICE.]

THE other day a gentleman who had left Madras nearly 20 years ago came back to it and was asked what his impression was of the changes that must have taken place during the somewhat long period of his absence. His reply was that no changes had really taken place; things were very much where they stood 20 years ago; the drainage was

still defective; the removal and disposal of the night-soil was still in the archaic condition for which Madras had always such an unenviable notoriety; the cleaning of the streets and lanes continued to be perfunctory; the roads were as bad as they ever were, except the main thoroughfares; so also the lighting; and as for epidemics, *e.g.*, cholera, they continued to be regular visitants as in the olden days; it was true that there were a few more showy buildings, but the dirt and squalor of the city continued unchanged. There is probably some exaggeration in the above statement, but few people will be found to deny its substantial truth.

My object in writing this article is to show that, unless the Corporation go in for more of *taxation* and *decentralisation*, no *real* improvement is possible. The drainage and water-supply scheme would cost, I am told, about Rs. 210 lakhs, of which a sum of Rs. 55 lakhs has been spent up to date. The Government have given a free grant of Rs. 57 lakhs, so that the Corporation has so far spent only what it obtained as a free gift. The Corporation has yet to find Rs. 155 lakhs, and it has asked for a further free grant from the Government, acting no doubt on the well-understood principle that the more you get the more you should ask. It is, however, unlikely that, with the war and other troubles, and the consequent shrinkage of provincial revenues and increase of provincial liabilities, the Government could afford to grant to the Corporation the grant of half a crore of rupees which, it is understood, has been asked for. Is the further execution of the drainage and water-supply scheme to be put off pending another windfall in the shape of a further dole from the Government? But the completion of the drainage and water-supply scheme is not the only thing to be done, though it is by far the biggest item ahead. The Corporation has committed itself to a number of other things, *e.g.*, model schools, additional medical institutions, improved vaccination and registration of vital statistics, better food inspection, increased charges on public works, conservancy, lighting, etc. Then, again, the question of

congested and unhealthy areas is becoming one of increasing urgency, and action could not, I suppose, be safely put off for clearing out several of the paracheries which are such a menace to the public health. All these things mean money. The receipts and charges of the Corporation are now fairly well balanced. In 1913-14, the opening balance was Rs. 5,95,959; the revenue was Rs. 30,04,824, including a Government grant of Rs. 2,88,000; the expenditure was Rs. 27,66,657, the closing balance being Rs. 8,34,126. If the Government grant is excluded, the Corporation revenue and expenditure are fairly well balanced; and there is nothing to spare for other purposes.

It seems to me that the time has come when the Corporation should ask itself whether it would not be well to go in *deliberately* for extra taxation, so as to bring about an amelioration of existing conditions within a reasonable length of time, instead of continuing the hopeless attempt to make bricks without straw which has led to much waste of time and labour in the past. The incidence of taxation per head of population in the Madras City for the last 5 years was as shown below :—

1909-10	Rs. 3-1-8
1910-11	„ 3-3-10
1911-12	„ 3-5-9
1912-13	„ 3-7-2
1913-14	„ 3-8-10

It may look as if the burden of civic taxation has been gradually rising during the last 5 years. This, however, would be a mistake. The burden of taxation, when it is represented in money, has to be taken along with the rise or fall in prices, so as to obtain an estimate of the increase or decrease of the real sacrifice involved. It is true that, measured in rupees, annas and pies, each individual in the City paid in 1913-14 about 15% more than he did in 1909-10, but when it is remembered that prices have risen during this period by over 25%, in other words, that the purchasing power of the rupee has

fallen to that extent, it follows that the real civic sacrifice involved per head of population is less than it was 5 years ago.

Again, let us consider what a taxation of Rs. 3-8-10 per head of population really means. It works out at less than 2 pies per diem; and pray let us not forget that even unskilled labour—I mean the ordinary cooly—now earns about 8 annas per diem. This should show how trifling the civic sacrifice really is per head, and it should be remembered that there is in Madras a very large body of people indeed above the unskilled labour stage. I wish that it were possible to take a census of the Madras City in point of income and ascertain what exactly is the income per head of population and then compare it with the civic taxation per head. I am pretty certain that it will then be discovered that Madras is very lightly taxed indeed for civic purposes. Compare it with what it is in Calcutta or Bombay. In both those cities the civic taxation works out at between Rs. 10½ and 11 per head, that is, at more than three times the Madras rate. I know of course the argument that Bombay and Calcutta are richer cities than Madras. But are they really more than three times as rich as we?

Then, again, assuming that we are comparatively poor in the Madras City, are we not doing all we can to confirm this poverty and prevent improvement by maintaining the low standard of municipal efficiency which alone is possible with the low taxation we have? If the administration of the city improves, if its drainage and water-supply scheme is completed, and if it gets well roaded, well lighted and well sanitationed, more people will come in, the value of property will rise, and we shall pave the way for being less poor than we now are. But in any case it seems to me absurd that, with the very low taxation that we now have, we, the ratepayers, should grumble at the inefficiency of the Corporation. The wonder is not that things are so bad as they are, but that they are not much worse. A distinguished friend of

mine who had returned some time ago from a trip to England, when asked what struck him most in that country, said that he was most struck by the efficiency of local government and the equanimity with which people bore heavy local taxation; the rate of local taxation varies, it seems, from 5 to 12 shillings on the pound of rental; about 7 or 8 shillings on the pound of rental is considered by no means unduly heavy. What does that mean? It works out at between 35 to 40% of the rental. In Madras, the rate of house-tax is about 21%, and yet the moment any suggestion is made to increase that rate, I suppose that there will be a howl. Let us hope that. howl or no howl, the rate *will* be raised, so as to provide the Corporation with the funds which they so badly need. As a humble ratepayer myself, I would gladly welcome an increase, and I earnestly appeal to my fellow ratepayers to stand up for the cause of true progress in the administration of the City.

I have referred to the question of house-tax to illustrate my point that, without more of taxation, effective improvement of local administration will not be feasible. I must however add that, in my humble opinion, the whole scheme of civic taxation in Madras requires thorough revision. At present the well-to-do classes do not, so far as I could see, bear their fair share of burden. A mere increase of the house-tax would not only not rectify this inequality, but may even enhance it. By all means let the poorer classes pay a little more than what they now do; the enhancement of the house-tax will bring that about; but a readjustment of the profession-tax, the vehicle-tax, etc., would be necessary to enforce that the well-to-do classes contribute an adequate share to the common fund.

Also, be it remembered that, while an increase of the revenue is necessary for progress, it may not by itself secure the object in view. The excessive centralisation of all work and responsibility is a serious evil just now in the administration of the city. If a corner of a lane in, say, Tondiarpet, is

neglected, the only remedy is, under present circumstances, to send a complaint to the head office which, after several days, makes an enquiry, which is absolutely valueless for the reason, firstly, that the enquiring officer is generally the subordinate complained against, and secondly, on account of the delay, verification of the complaint is impracticable. It appears to me that the formation of a number of local committees, with powers to act in minor matters, and all controlled by the central organisation of the Corporation, would go far to meet this evil. I hope in a subsequent issue to elaborate this part of the subject.

Town Planning.

Need of Town Surveys and Local Exhibitions as preparatory to Town Planning Schemes.

CALCUTTA had its Calcutta Improvement Act (1911), and the Bombay Town Planning Bill has just passed through the Legislative Council. In Madras, the problems of the City are coming to the front; the inauguration of lectures on Town Planning by Prof. P. Geddes may be regarded as a preliminary step towards the introduction of a Town Planning Act for Madras.* In view of this increased activity in Town Planning in this country, the following Memorandum † prepared by the Sociological Society's Cities Committee will be found highly useful to Municipal bodies. The Memorandum points out the correct methods to be adopted and warns against the dangers of what one may call amateur Townplanning.

SUMMARY OF THE CITIES COMMITTEE'S WORK.—We welcomed and highly appreciated the Town Planning Act and we early decided that it was not necessary for this committee to enter into its discussion in detail, or that of its proposed amendments. We have addressed ourselves essen-

* A Town Planning Bill is, we understand, in course of preparation.

† Slightly abbreviated.

tially to the problem of town planning itself, as raised by the study of particular types of towns, and districts involved; and to the nature and method of the City Survey which we are unanimously of opinion is necessary before the preparation of any Town Planning Scheme can be satisfactorily undertaken. Schemes, however, are in incubation, alike by Municipal Officials, by public utility Associations, and by private individuals, expert or otherwise, which, whatever their particular merits, are not based upon any sufficient surveys of the past development and present conditions of their towns, nor upon adequate knowledge of good and bad town planning elsewhere. In such cases, the natural order, that of town survey before town planning, is being reversed; and in this way individuals and public bodies are in danger of committing themselves to plans which would have been widely different with fuller knowledge; yet which, once produced, it will be too late to replace, and even difficult to modify.

We have, therefore, during the past four years addressed ourselves towards the initiation of a number of representative and typical City Surveys, leading towards Civic Exhibitions, and these we hope to see under municipal auspices, in conjunction with public museums and libraries, and with the co-operation of leading citizens representative of different interests and points of view. In Leicester and Saffron-Walden, Lambeth, Woolwich and Chelsea, Dundee, Edinburgh, Dublin, and other cities, progress has already been made: and with the necessary skilled and clerical assistance, and moderate outlays, we should be able to assist such surveys in many other towns and cities. Our experience already shows that in this inspiring task of surveying, usually for the first time, the whole situation and life of a community in past and present, and of thus preparing for the planning scheme which is to forecast, indeed largely decide, its material future, we have the beginnings of a new movement—one already characterised by an arousal of civic feeling, and the corresponding awakening of more enlightened and more generous citizenship.

RECOMMENDATIONS BY THE COMMITTEE.—The preparation of a local and civic survey previous to the preparation of a Town Planning Scheme, though not actually specified in the Act,* is fully within its spirit; and we are therefore most anxious that at least a strong recommendation to this effect should form part of the regulations for Town Planning Schemes provided for the guidance of local authorities by the Local Government Board. Without this, Municipalities and others interested are in danger of taking the very opposite course, that of planning before survey. Our suggestion towards guarding against this is hence of the most definite kind, viz.:— Before proceeding to the preparation of a Town Planning Scheme, it is desirable to institute a Preliminary Local Survey to include the collection and public exhibition of maps, plans, models, drawings, documents, statistics, etc., illustrative of situation, historic development, communications, industry and commerce, population, town conditions and requirements, etc.

We desire to bring this practical suggestion before local authorities, and also to ventilate it as far as may be in public opinion and through the press, and in communication to many bodies whose interest in Town Planning Schemes from various points of view has been recognised in the Third Schedule of the Act, as lately amended by the Government in response to representations from our own and other societies.

DANGERS OF TOWN PLANNING BEFORE TOWN SURVEY.—What will be the procedure of any community of which the local authorities have not as yet adequately recognised the need of the full previous consideration implied by our proposed inquiry, with its Survey and Exhibition? It is that the Town Council, or its Streets and Buildings Committee, may simply remit to its City Architect, if it has one, more usually to its Borough Surveyor or Engineer, to draw up the Town Planning Scheme.

* The Housing, Town-Planning, etc., Act, 1909.

This will be done after a fashion. But few of these officials or of their committees have as yet had time or opportunity to follow the Town Planning movement even in its publications, much less to know it at first hand, from the successes and blunders of other cities. Nor do they always possess the many-sided preparation—geographic, economic, artistic, etc., which is required for this most complex of architectural problems, one implying, moreover, innumerable social ones.

If the calling in of expert advice be moved for, the Finance Committee of the Town Council, the rate-payers also, will tend to discourage the employment of an external architect. Moreover, with exceptions, still comparatively rare, even the skilled architect, however distinguished as a designer of buildings, is usually as unfamiliar with town planning as can be the town officials; often if possible, yet more so. For they have at least laid down the existing streets; he has merely had to accept them.

No doubt, if the plan thus individually prepared be so positively bad, in whole or in part, that its defect can be seen by those not specially acquainted with the particular town or with the quarter in question, the L. G. B. can disapprove or modify. But even accepting what can be thus done at the distance of London, or even by the brief visit from a L.G.B. Advisory Officer, the real danger remains; not that of streets, etc., absurdly wrong perhaps; but that of the *low pass standard*—that of the mass of municipal art hitherto; despite exceptions, usually due to skilled individual initiative.

Town Planning Schemes produced under this too simple and too rapid procedure may thus escape rejection by the L. G. B. rather than fulfil the spirit and aims of its Act; and they will thus commit the towns for a generation, or irreparably, to designs which the coming generation may deplore. Some individual designs will no doubt be excellent; but there are not as yet many skilled town planners among us. Even

in Germany, still more in America (despite all recent praise, much of which is justified), this new art is still in its infancy.

As a specific example of failures to recognise and utilise all but the most obvious features and opportunities of even the most commanding sites, the most favourable situations, Edinburgh may be chosen. For, despite its exceptional advantages, its admired examples of ancient and modern town planning, its relatively awakened architects, its comparatively high municipal and public interest in town amenity, Edinburgh notoriously presents many mistakes, disasters, and even vandalisms of which some are recent ones. If such things happen in cities which largely depend upon their attractive aspect, and whose town council and inhabitants are relatively interested and appreciative, what of towns less favourably situated, less generally aroused to architectural interest, to local vigilance and civic pride? Even with real respect to the London County Council and the record of its individual members, past or present, it must be said that this is hardly a matter in which London can expect the provincial cities to look to her for much light and leading as a whole, while her few great and monumental improvements are naturally beyond their reach.

In short, *passable* Town Planning Schemes may be obtained without this preliminary Survey and Exhibition for which we desire to see in each town and city; but the best *possible* cannot be expected. From the confused growth of the recent industrial past we tend to be as yet easily contented with any improvement: this, however, will not long satisfy us, and still less our successors. This Act seeks to open a new and better era, and to render possible cities which may again be beautiful: it proceeds from Housing to Town (Extension) Planning, and thus raises inevitably before each Municipality the question of town planning at best—in fact of city development and city design.

METHOD AND USES OF PRELIMINARY SURVEY.—The needed preliminary inquiry is readily out-lined. It is that

of a City Survey. The whole topography of the town and its extensions must be taken into account, and this more fully than in the past, by the utilisation not only of maps and plans of the usual kind, but of contour maps, and if possible, even relief models. Of soil and geology, climate, rainfall, winds, etc., maps are also easily obtained, or compiled from existing sources.

For the development of the town in the past, historical material can usually be collected without undue difficulty. For the modern period, since the railway and industrial period have come in, it is easy to start with its map on the invaluable 'Reform Bill Atlas of 1832, Fig. 30', and compare with this its plans in successive periods up to the present.

By this study of the actual progress of town developments (which have often followed lines different from those laid down or anticipated at former periods) our present forecasts of future developments may usefully be aided and criticised.

Means of communication in past and present, and in possible future, of course, need specially careful mapping.

In this way also appears the need of relating the given town not only to its immediate environs, but to the larger surrounding region. This idea, though as old as geographical science, and though expressed in such a term as 'County Town', and implicit in 'Port', 'Cathedral City', etc., is in our present time only too apt to be forgotten, for town and county interests are commonly treated separately with injury to both. The collaboration of rustic and urban points of view, of county and rural authorities should thus as far as possible be secured, and will be found of the greatest value. The recent agricultural development in Ireland begins to bring forward the need of a more intelligent and practical co-operation of town and country than has yet been attempted; and towards this end surveys are beginning, and are being already found of value.

Social surveys of the fullness and detail of Mr. Booth's well-known map of London may not be necessary; but such broader surveys as those of Councillor Marr in his survey of Manchester, or of Miss Walker for Dundee, and the like, represent the very minimum wherever adequate civic betterment is not to be ignored.

The preparation of this survey of the town's Past and Present may usually be successfully undertaken in association with the town's library and museum, with such help as their curators can readily obtain from the town house, from fellow-citizens acquainted with special departments, and, when desired, from the Sociological Society's Cities Committee. Experience in various cities shows that a Civic Exhibition can readily be put in preparation in this way, and without serious expense.

The urgent problem is, however, to secure a similar thoroughness of preparation of the Town Planning Scheme which is so largely to determine the future.

To the exhibition of the City's Past and Present there therefore needs to be added a corresponding wall-space (*a*) to display good examples of town planning elsewhere; (*b*) to receive designs and suggestions towards the City's Future. These may be received from all quarters; some, it may be, invited by the Municipality, but others independently offered, and from local or other sources, both professional and lay.

In this threefold Exhibition, then, of their Borough or city—Past, Present and Possible—the municipality and the public would thus practically have the main outlines of the inquiry needful before the preparation of the Town Planning Scheme clearly before them; and the education of the public, and of their representatives and officials alike, may thus—and so far as yet suggested, thus only—be arranged for. Examples of town plans from other cities, especially those of kindred site or conditions will here be of peculiarly great value, indeed are almost indispensable.

After this exhibition—with its individual contributions, its public and journalistic discussion, its general and expert criticism—the municipal authorities, their officials and the public are naturally in a much more advanced position as regards knowledge and outlook from that which they occupy at present, or can occupy if the short and easy off-hand method above criticised be adopted, obeying only the minimum requirements of the Act. The preparation of a Town Planning Scheme as good as our present (still limited) lights allow, can then be proceeded with. This should utilise the best suggestions on every hand, selecting freely from designs submitted, and paying for so much as may be accepted on ordinary architectural rates.

As the scheme has to be approved by the L. G. B., their Inspector will have the benefit of the mass of material collected in this exhibition, with corresponding economy of his time and gain to his efficiency. His inspection would essentially be on the spot; any critic who may be appointed would naturally require to do this. His suggestions and emendations could thus be more easily and fully made, and more cheerfully adopted.

The selection of the best designs would be of immense stimulus to individual knowledge and invention in this field, and to a worthy civic rivalry also.

OUTLINE SCHEME FOR A CITY SURVEY AND EXHIBITION.—The incipient surveys of towns and cities, above referred to, are already clearly bringing out their local individuality in many respects, in situation and history, in activities and spirit. No single scheme of survey can therefore be drawn up so as to be equally applicable in detail to all towns alike. Yet unity of method is necessary for clearness, indispensable for comparison; and after the careful study of schemes prepared for particular towns and cities, a general outline has been drafted, applicable to all towns, and easily elaborated and adapted in detail to the

individuality of each town or city. It is therefore appended, as suitable for general purposes, and primarily for that Preliminary Survey previous to the preparation of a Town Planning Scheme, which is the urgent recommendation of this Committee.

The survey necessary for the adequate preparation of a Town Planning Scheme involves the collection of detailed information upon the following heads. Such information should be as far as possible in graphic form, *i.e.*, expressed in maps and plans illustrated by drawings, photographs, engravings, etc., with statistical summaries, and with the necessary descriptive text; and is thus suitable for exhibition in town-house, museum or library; or, when possible, in the city's art galleries.

The following general outline of the main headings of such an inquiry admits of adaptation and extension to the individuality and special conditions of each town and city.

SITUATION, TOPOGRAPHY, AND NATURAL
ADVANTAGES :—

- (a) Geology, Climate, Water Supply, etc.
- (b) Soils, with Vegetation, Animal Life, etc.
- (c) River or Sea Fisheries.
- (d) Access to Nature (Sea Coast, etc.).

MEANS OF COMMUNICATION, LAND AND
WATER :—

- (a) Natural and Historic.
- (b) Present state.
- (c) Anticipated Developments.

INDUSTRIES, MANUFACTURES, AND
COMMERCE :—

- (a) Native Industries.
- (b) Manufactures.
- (c) Commerce, etc.
- (d) Anticipated Developments.

POPULATION :—

- (a) Movement.
- (b) Occupations.
- (c) Health.
- (d) Density.
- (e) Distribution of Well-being (Family Conditions, etc.)
- (f) Education and Culture Agencies.
- (g) Anticipated Requirements.

TOWN CONDITIONS :—

- (a) HISTORICAL: Phase by Phase, from Origins onwards. Material Survivals and Associations, etc.
- (b) RECENT: Particularly since 1832 Survey, thus indicating Areas, Lines of Growth and Expansion, and Local Changes under Modern Conditions, *e.g.*, Streets, Open Spaces, Amenity, etc.
- (c) Local Government Areas (Municipal, Parochial, etc.).
- (d) PRESENT: Existing Town Plans, in general and detail.
 - Streets and Boulevards.
 - Open Spaces, Parks, etc.
 - International Communications, etc.
 - Water, Drainage, Lighting, Electricity, etc.
 - Housing and Sanitation (of localities in detail).
 - Existing activities towards Civic Betterment, both Municipal and Private.

TOWN PLANNING SUGGESTIONS AND DESIGNS :—

- (A) Examples from other towns and cities, British and Foreign.

(B) Contributions and Suggestions towards Town Planning Scheme, as regards :—

- (a) Areas.
- (b) Possibilities of Town Expansion (Suburbs, etc.)
- (c) Possibilities of City Improvement and Development.
- (d) Suggested Treatments of these in detail (alternatives, when possible).

A fuller outline for city activities in detail would exceed our present limits; moreover, it will be found to arise more naturally in each city as its survey begins, and in course of the varied collaboration which this calls forth. The preparation of such more detailed surveys is in progress in some of the towns above mentioned, and is well advanced, for instance, in Edinburgh and Dublin; and though these surveys are as yet voluntary and unofficial, there are indications that they may before long be found worthy of municipal adoption. The recent example of the Corporation of Newcastle-on-Tyne, towards establishing a civic museum and survey, may here again be cited as encouraging, and even predicted as likely before long to become typical.

The question is sometimes asked, How can we, in our town or city, more speedily set agoing this survey and exhibition without the delay of depending entirely on private and personal efforts? Here the services of the Cities and Town Planning Exhibition may be utilised, as notably in the case of Dublin. In this way the city's survey is initiated in consultation with the local experts of all kinds, the broad outline thus prepared is capable of later local development in detail with economy of time and convenience of comparison with other cities. Its exhibition of civic surveys from other places is also suggestive and encouraging to local workers: while the variety of examples of town planning and design from all sources are, of course, helpful to all interested in the preparation of the best possible local schemes.

Notes.

CHIDAMBARAM WATER WORKS.—Owing to an alteration in the tour programme of His Excellency Lord Pentland, the opening ceremony of the Chidambaram Water Works has been postponed to the 23rd February, 1915. We have withheld the completion report for publication in our next issue.

ELECTRIC POWER FOR THE BOMBAY MILLS.—The completion of the first stage of the scheme for the supply of electricity for the mills of Bombay by the Tata Hydro-Electric Power Supply Company, Ltd., was celebrated on the 8th February by an interesting ceremony at the receiving station at Parel. The ceremony of switching on the power was performed by His Excellency Lord Willingdon in the presence of a large number of people, representing every community and every industry in Bombay. The scheme is financed by Indian capital and the whole project is under the management of an Indian Board of Directors. The scheme owes its origin to the initiative and courage of Mr. J. R. Tata, the pioneer of Indian industrial life.

SITE TAX IN THE PUNJAB.—It is notified that with the previous sanction of the Local Government, and under Section 61 (a) of the Punjab Municipal Act III of 1911, the Municipal Committee of Dera Ghazi Khan has imposed a site tax at the following rates within municipal limits on the following classes of buildings.—

(1) On all factories within municipal limits.....8 annas *per mensem* per acre.

(2) On all buildings outside the City Circular Road but situated within municipal limits...4 annas *per mensem* per acre.

The tax comes into force after three months from the date of the notification and will be recovered quarterly in advance.

DEOGHUR MUNICIPAL BY-LAWS.—The by-laws framed by the Deoghur Municipality in the District of the Santal Parganas

and by the Dinapur Nizamut Municipality, under Section 350 of the Bengal Municipal Act, have been confirmed by the Lieutenant-Governor of Bihar and Orissa in Council, and are published in the Bihar and Orissa Gazette.

MUZAFFARPUR WATER-WORKS.—The following donations have been paid to the Muzaffarpur Municipality in aid of its Water-works Scheme:—

The Hon'ble Maharaja Bahadur Sir Rameswar			
Singh, K.C.I.E., of Darbhanga	...	Rs.	20,000
Chanduri Mahadeo Prasad of Nanpur	...	..	10,000
Babu Bishun Pragash Narayan Singh of			
Madhuban	...	..	7,000

RÁNEBENNUR MUNICIPALITY.—An application from the Ránebennur Municipality is published for the grant of a loan of Rs. 15,000 from the Bombay Government under the provisions of the Local Authorities Loan Act, 1879, for constructing a new Kánarese School-house for primary education (Rs. 9,841-8-0) and a Municipal office (Rs. 5,049). The estimated cost of the School-house is Rs. 19,683 of which a building grant equal to half of the total cost will be received from Government. The loan carries interest at 4 per cent and is repayable in 20 equal annual instalments.

POPULAR LECTURES ON SANITARY SUBJECTS.—On p. 137 we reprint the model lecture on Food, prepared by Major W. A. Justice, I.M.S., Sanitary Commissioner, Madras. The lecture is well adapted for educating people; and if the local bodies will co-operate with the lecturing staff, there is no doubt that good results will follow.

NEW LOCAL BOARDS IN BOMBAY.—The Bombay Government have constituted 3 Táluka Local Boards (Godhra, Dohad and Kalol) in the Panch Maháls District, with effect from 1st April 1915. Each Board will consist of 6 elective members (one to be elected by the Local Municipality, one by the holders of entire alienated villages in the táluka, and 4 by certain notified groups of villages in the area to be subject to the

authority of the newly constituted Board) and 6 nominated members to be appointed by Government.

A NEW NOTIFIED AREA.—The Bombay Government have published drafts of notifications which it is proposed to issue for constituting Hirekerur Town, Dhàrwâr, a notified area, under Section 187 of the Bombay District Municipalities Act, III of 1901.

ASBESTILITE, A NEW BUILDING MATERIAL.—This is the age of cement, and one of its latest applications is for tiles for roofing, as well as a lining for walls and ceilings. The cement is mixed with asbestos and the combination is so effectively accomplished as to yield a homogeneous and impressive article. For roofing purposes the tiles are made in red, blue or brown, and when laid present an artistic appearance. The cement ensures solidity and protection against the weather while the asbestos renders the material fireproof. The material may be used for ordinary constructional purposes, if desired. It possesses one desirable feature. The material being a non-conductor of heat, the building so constructed is cool in summer as the solar heat is unable to radiate into the interior; while in winter it is warm because the internal heat is kept within. The tiles are lighter than those made from clay or slate, are inexpensive and have the additional quality of being imperishable. Asbestilite, as it is called, has been utilised in Canada for constructional purposes with unique success. And bearing in mind the trying character of the North American climate with its violent extremes of temperature according to season, it should be useful in the tropical countries.

THE DUST NUISANCE.—We take the following from the Administration Report of the Rangoon Municipality:—The dust nuisance is one which has to be seriously contended with, and there was a good deal of complaint during the hot months of the last dry weather. The cause is not far to seek but the application of an immediate and effective remedy is not easy. The advent of motor vehicles is undoubtedly one

of the main causes, which the new asphalted roads, themselves dustless, are nevertheless covered with fresh dust every day which is deposited on them from the 30 feet side streets, foot-paths and back drainage spaces, and as the smooth pavement offers very little resistance to the picking up of the dust, it is blown in a regular cloud along the street by the strong winds prevailing in the hot months. With the paving of the foot paths and back drainage spaces and the tarring or oiling of the side streets, the nuisance would largely disappear, but it is obvious that this cannot be done all at once.

RAT DESTRUCTION.—Since the Port of London Authority introduced the scheme for the extermination of rats in 1901, 834,000 rats have been destroyed. The average bag is now about 3,000 a month.

RELIEF OF LOCAL BODIES FROM CONTRIBUTIONS TO GOVERNMENT.—We published, in our last issue, a press note issued by the Bombay Government announcing the sanction by the Secretary of State of the remission of certain charges made by Government for services performed by their officers on behalf of local bodies. It appears that similar relief to local bodies in the Madras Presidency has also been given from the 1st April, 1914 (*vide* paras. 14, 15, 192 and 202 of Part IV of the Revised Financial Statement for 1914-15 presented to the Legislative Council on the 11th March, 1914).

WATER SUPPLY SCHEMES FOR NEW MUNICIPALITIES.—An estimate amounting to Rs. 1,31,000 for a water-supply scheme for Narasaraopet has been sanctioned for execution and an indent for materials required from England for it is under preparation. A scheme for Peddapuram is under investigation by the Sanitary Engineer.

BOMBAY LEGISLATIVE COUNCIL.—The Committee appointed by the Bombay Corporation to report on the Government proposal to amend the Municipal Act so as to make it admissible for Government to select the Municipal Commissioner for appointment as an additional member of the Bombay

Legislative Council reported to the Corporation stating that it was not desirable that the existing provisions of the Municipal Act should be amended as proposed by Government. The report said: The existing bar to the Municipal Commissioner's nomination to the Legislative Council was deliberately placed after considerable discussion in the Council when the City of Bombay Municipal Bill of 1887 was under consideration. In that Bill a provision had been inserted authorising the Commissioner to be an additional member of the Council. The Corporation, however, objected to the proposal and the clause was ultimately removed on that occasion. His Excellency the President, the Right Hon. Lord Reay, then observed that as the occasions on which the Governor would be inclined to make the Commissioner an additional member of his Council were so rare and as he also felt the force of the argument that the Municipal Commissioner should not be taken away from his duties in Bombay, he thought that the clause in question need not be retained. The Committee consider that these arguments still hold good. They think that though the advice of the Municipal Commissioner on questions affecting the administration of the Municipality of Bombay would be helpful to the Legislative Council and its Select Committees, such advice can always be substantially obtained, whether the Commissioner is actually a member of the Council or not. As regards the eligibility of the Chairman of the Bombay Port Trust, of the Bombay Improvement Trust and of the Calcutta Corporation to be Members of the Legislative Council, the Committee beg to observe that the constitution of the Bombay Corporation is considerably different and the Commissioner does not occupy the same position as the Chairman of the other bodies. The Port Trust and the Improvement Trust have been given the franchise for returning a member of the Council and it would be an advantage to those bodies to have their interests represented by their respective Chairmen. The Bombay Corporation have, however, already got the right to elect one

member to the Council and they have asked for the right to return another member. If therefore the Municipal Commissioner is also allowed to be a member of the Council, occasions may arise when the representatives of the Corporation may find themselves opposed by the Commissioner in voicing the views of the Corporation. Such a conflict would be obviously undesirable and may have prejudicial influence on the interests of the Corporation. The Committee therefore recommend that Government may be informed that having regard to all these difficulties, the Corporation do not see their way to accept the proposal.

At the adjourned ordinary meeting of the Corporation held on the 4th February, 1915, the Committee's report was considered. It was proposed by Mr. H. P. Mody that the report "be approved and adopted and the President be requested to address Government in terms of the report." Mr. Jamsetji A. Wadia moved an amendment that "the report be recorded and the President be requested to inform Government that the Corporation see no objection to the appointment of the Municipal Commissioner as an additional member of the Bombay Legislative Council, should they consider his presence on the Council desirable." On the amendment being put to the vote, there were 27 votes *for* it and 17 *against* it. A poll was demanded and the result of the counting was that there were 28 *for* and 18 *against* the amendment. The President declared that the amendment was carried.

TOWN PLANNING LECTURES.—Professor P. Geddes delivered three courses of lectures and held a Cities and Town-planning Exhibition in Madras. The third course of lectures, delivered under the auspices of the University of Madras, dealt with the philosophy of town-planning and covered a wide range of subjects. The first two courses, however, dealt with the practical problems of town-planning and have afforded much food for thought and reflection. A keen observer, Prof. Geddes has understood Indian conditions as well as most Europeans who have spent several long years

in this country, and several of his suggestions have a practical value. His criticisms of indiscriminate destruction of houses in the name of relief of congestion, without providing homes for those rendered houseless, and of the compulsory closing of private wells and tanks without providing an adequate supply of water to the people, will be welcomed with a sigh of relief by the ratepayers, specially in Bombay and Madras. His morning discourses at the Exhibition were particularly interesting and instructive. Prof. Geddes has done a service to this country by compelling attention to a subject which has during recent years received a good deal of attention in the western countries; and we venture to think that not merely in town-planning but in every other department of municipal activity, Prof. Geddes has aroused that spirit of public interest and public duty which is the essential basis of all healthy local Self-Government.

A CONFERENCE OF MUNICIPAL CHAIRMEN.—We are glad to note a new departure made by the Government of Madras. Taking advantage of the Town planning Exhibition opened by Professor Geddes, to which all the Chairmen of the mofussil municipalities were invited, the Government held on the 25th January last an informal conference of these Chairmen to discuss the larger problems connected with municipal administration. We understand that H. E. the Governor welcomed the Chairmen in a short speech and that the discussions were carried on under the presidency of the Hon. Mr. P. S. Sivaswami Aiyar, C.S.I., C.I.E., who is in charge of the Local and Municipal portfolio. The results of the deliberations have not been made public but the following are among the subjects taken under consideration :—

(1) Methods of augmenting municipal revenues under the New Municipal Act, which is under preparation.

(2) Modification of the constitution of Councils so as to give wider powers to the bigger municipalities by giving them a chief executive officer as in the case of the Bombay Municipal Corporation.

(3) The need for a Town Planning Act and the introduction of the principle of "betterment" in the acquisition of lands for municipal purposes.

(4) Improved methods of conservancy in towns.

(5) The need for legislation in regard to the location of factories in towns.

(6) Provision of improved water-supply and how to make a distinction for purposes of charging for water used for domestic and non-domestic purposes.

(7) General question of grants by Government and how to make them more permanent. Also the question of preparing comprehensive sanitary programmes for a series of years.

It is understood that several of the Chairmen who attended the conference had not come prepared to consider these questions and that the conference was not quite as valuable as it might have been. We commend to the Municipal Chairmen and Councillors that they could improve upon the system inaugurated by the Government by having Municipal Conferences periodically in selected towns where they could compare notes and widen their range of vision.

ARTESIAN BORING.—On page 105 we print a note by Mr. H. Nowroji, Deputy Sanitary Engineer to the Government of Madras, in elucidation of the very interesting diagrams, relating to the deep boring now being made at Cochin, which were exhibited at the Indian Science Congress, which recently concluded its second Sessions at Madras. It is the first deep boring in search of a water-supply ever attempted on the west coast of the Peninsula, and for that reason, Mr. Nowroji's note, which is a reasoning of the prospects of success, based on the physical and geological features of the surrounding country and the results of the boring as far as it has progressed, is very interesting. The boring, we understand, has now reached a depth of 360 feet. This boring, as also the one which the enterprising firm of Messrs. Shenai Bros. have sunk on the Island of Vypeen, which lies opposite the town of Cochin, has established the existence of fresh water

in small quantities. In speaking on the subject of this boring at the Science Congress, Dr. W. F. Smeeth and other speakers agreed with Mr. Nowroji's surmise that a purer and more abundant supply of water possibly exists nearer the underlying gneiss. The depth at which the gneiss lies is, however, a matter of speculation, and can only be ascertained by a boring. His Excellency Lord Pentland has taken much interest in the boring. About two years ago when he passed through Cochin on his way to the Laccadive Islands, His Excellency realised the extent of the suffering caused by the want of a sufficient and uncontaminated supply of drinking water in this important commercial centre, and to the interest then evoked we doubtless owe the undertaking, at a large cost, of what is more or less an experimental boring. We hope that Mr. Nowroji will prove a good prophet and that the boring operations will result in a plentiful supply of water to Cochin where good drinking water is now scarce.

Bombay Municipal Corporation.

MARATHA HOSPITAL AND TUBERCULOSIS PATIENTS.—At an adjourned ordinary monthly meeting of the Corporation held on the 1st February, 1915, the debate on the following proposition moved at the meeting held on the 21st January, 1915, and on the *amendment* moved at the meeting held on the 25th January, 1915, was resumed :—

ORIGINAL PROPOSITION.—Proposed by the Hon'ble Sir Pherozechah M. Mehta, K.C.I.E., seconded by Dr. Nadirshaw H. E. Sukia—

“ That the 10th Report, dated the 13th October, 1914, of the Medical Relief Committee regarding a proposal for utilising two wards at the Maratha Hospital for patients suffering from Tuberculosis, be approved and adopted, and a copy be forwarded to the Commissioner for information with a request that he will inform the Joint Honorary Secretaries, King George V' Anti-Tuberculosis League, accordingly.”

AMENDMENT.—Proposed by Major W. G. Liston, C.I.E., I.M.S., seconded by the Hon'ble Dr. D'Monte—

“ That the 10th Report, dated the 13th October, 1914, of the Medical Relief Committee regarding a proposal for utilising two wards at the Maratha Hospital for patients suffering from Tuberculosis, be *recorded*.

2. That the Corporation accept the offer of the King George V Anti-Tuberculosis League and that the Commissioner be requested to carry out the details of the arrangement in accordance with the suggestion made in his letter, subject to the proviso that the Hospital will be controlled by the Special Assistant Health Officer on behalf of the Municipality and subject further to the understanding that the appointment of the Medical Officer in charge of the ward be approved by and be under the control of the Commissioner.”

RIDER TO THE ORIGINAL PROPOSITION :—Proposed by Mr. H. P. Mody—

“That the President be requested to approach Government with a view to ascertaining whether they would be prepared to co-operate with the Corporation in devising measures for dealing with Tuberculosis, and, if it be considered necessary, to revise the settlement regarding medical relief.”

The Hon'ble Sir Pheroza Shah, on being asked whether he would accept the rider, observed that he was willing to do so if the amendment proposed by Major Liston was withdrawn by him. Major Liston having declined to withdraw the amendment, the rider was not accepted.

After discussion, the amendment, on being put to the vote, was *lost*, there being 19 votes *for* it and 27 *against* it.

The original proposition was then carried.



Statistical Information.

Infantile Mortality (under 1 year).

THE rate of infantile mortality in a city affords one of the chief tests of the efficiency of its Public Health administration. The following table shows the births and infant deaths (under one year) in Bombay, Calcutta, Madras and Rangoon. Making every allowance for defective registration, the fact that approximately one out of every four infants enters the world to leave it within a year is a serious blot on Municipal administration. Strenuous effort on the part of the Municipal authorities and hearty co-operation on the part of the leaders of the people are necessary if the causes of infantile mortality are to be effectively dealt with.

We are glad to note that in Bombay the rate is steadily and visibly falling; the total mortality among infants up to one year of age in Bombay during 1913 was 7,488 as compared with 9,646 during 1912, showing a diminution of 2,158 deaths.

	Births.			Infant deaths under 1 year.			Rate of infant mortality per 1,000 births.
	Males	Females	Total	Males	Females	Total	
Bombay	10,006	9,636	19,664	3,923	3,565	7,488	268·74.
Calcutta	9,445	8,941	18,386	2,760	2,294	5,054	274·60.
Madras	9,934	9,536	19,470	3,014	2,699	5,713	293·40.
Rangoon	2,840	2,694	5,534	842	647	1,489	269·06.

Health and Sanitation.

The Problem of Milk Supply.

THE question of the measures to be taken to improve the regulation of the milk supply in order to secure a much-needed improvement in the quality of the milk sold in Rangoon was the subject of correspondence between the Municipal Committee and the Local Government who were asked to pass certain amending legislation in order to give the Committee the necessary powers to carry into effect the measures which they proposed to take. Government replied to the effect that they were

advised that the Committee already possessed ample powers under the existing provisions of the Burma Municipal Act * to take action for the better control of the milk supply. It appeared to the Committee from this reply that the position had not been entirely apprehended by the Legal Adviser to Government, and the Committee were again advised that the power to inspect milk-farms situated outside Municipal limits, —from which 80 per cent of the milk consumed in Rangoon is imported—the enforcement of sanitary measures at such farms, the prevention of contamination or watering of milk before it is despatched to Rangoon and the regulation of the transport of milk to Rangoon—which are the first essentials of their scheme—could not be directly and conveniently exercised without the conferment upon the Committee of additional powers by legislation. The Committee were further advised that the existing powers are insufficient even for the inspection and testing of milk in course of transport within the Municipality and for the seizure of milk found on such inspection to be either tainted or open to suspicion. In view of the opinion expressed by their Legal Advisers, the Committee again addressed the Local Government urging the necessity for legislation upon the lines previously proposed by them. To this last letter, Government replied asking to be informed exactly in what way the Committee proposed to give practical effect to the powers which would be conferred upon them in the event of the Burma Municipal Act being amended on the lines suggested. Briefly stated, the scheme of the Committee is to take all reasonable measures to ensure that milk shall not be drawn from diseased cows, that the milk from the moment it is drawn to the time of its receipt at the Depot in Rangoon shall not be contaminated or watered, and that if retail dealers desire to sell watered milk, they will be permitted under license to do so, one of the conditions of the license being that the milk shall be watered at the Depot only with pure water up to a prescribed limit. It must be recognised

* Section 102 of the Burma Municipalities Act.

that in the interests of the poorer classes the sale of cheap but wholesome watered milk must be allowed. It may be remarked that the percentage of fat in the local milk is greater than that of English cows, so that a fair amount of water may be added without bringing the percentage of fat below that allowed in England.

Anti-Malarial Operations in the United Provinces.

Lectures on malaria were delivered at Allahabad, Gorakhpur, Agra and Moradabad in Urdu and English with lantern demonstrations. A malarial survey of Lucknow City was undertaken, opportunity being taken during all field work to fill up any hiatus in the list of anopheline fauna of the different districts.

Larvæ-eating fish were experimented with, more especially as regards their capabilities of surviving under artificial conditions. The small fish named "Haplochilus" was, after prolonged search, eventually located in the little Gandak river and some of its tributaries in the Gorakhpur District and from here supplies were obtained from which a large number of Lucknow fountains and the water works settling tanks were stocked.

The work of the Provincial and Divisional Committees was carried out as usual, suitable representatives of the Unani, Tebbi and Ayurvedic practitioners being sanctioned for each Committee.

Eighteen travelling dispensaries were also working in connection with malaria.

Model Lectures on Sanitary Subjects.

Food.

[PREPARED BY MAJOR W. A. JUSTICE, M.B., C.M., D.P.H.,
I.M.S., SANITARY COMMISSIONER, MADRAS.]

Food is necessary for all of us. Without food we should get thin and weak and after a short time we should die.

In children, food is changed into the different body tissues and the result is growth. In children and adults, food furnishes energy for work and play and for warming the body, just as coal and water enable the steam-engine to do work and give out heat.

However much coal and water you give a steam-engine, it will not grow and if any part of the engine is worn, it must be mended or replaced by man. With our bodies it is different. As we work, our tissues are constantly getting worn away and as long as we are properly fed, new tissues are formed from our food to replace those worn out.

Our food then is destined to become part of ourselves : should we not take care to eat sufficient suitable food and to avoid any food which is not suitable ?

It is true we depend on food for our lives but it is also true that food brings disease and even death to many. I will now tell you some of the ways in which our food may harm us.

The first thing to consider is the quantity of food we should eat. If we eat too little, we get weak and thin. Too much food may cause pain in the stomach, indigestion, diarrhoea or constipation, head-ache, excessive fat and disease of the liver, kidneys and other organs. Few persons willingly eat too little but many eat too much. We should eat only as much as we need and not as much as we can, stopping when our hunger is satisfied.

Our meals should be at regular fixed hours, small meals at intervals of about five hours being better than large meals at long intervals.

The next consideration is the quality of our food. Food which has been kept so long that it has gone bad is likely to be poisonous and may cause sickness and death. Even good fresh food may, through our own fault, become soiled with the little living organisms which cause disease. I shall now mention some of the commoner kinds of food and tell you how they may cause disease and what we should do to guard our health.

To begin with, I shall take meat. Good meat must be obtained from a healthy animal which has been slaughtered and not from an animal which has suffered from or died of disease or old age. The killing and cutting up must be done in a place set apart which must be kept very clean. The meat, when exposed for sale, should be protected from dust and flies, because dust may contain disease-germs and flies may carry them and deposit them on food.

Meat which is going bad and has a bad smell should not be eaten. It is poisonous and cooking does not destroy the poisons. Meat which contains disease-germs may be made harmless by proper cooking. All cooked food is less likely to cause disease than raw food. Further, food should be eaten as soon as it is cooked, because if kept and allowed to become cold, it is likely to be again contaminated by dust, flies, dirty vessels or hands.

I shall now turn to milk. Milk from sick animals may cause disease. Only milk from healthy, well-fed animals should be drunk. Animals should be kept clean and the stables should be clean with plenty of light and air. The milkman should be healthy and wash his hands before milking. The vessels in which milk is received should be cleaned beforehand with *boiling* water and should be covered to keep out dust and flies. Dishonest milkmen add dirty water to milk and make it very dangerous to drink. In this country, all milk should be boiled before use and if kept in the house, the vessel must be cleaned with boiling water before it receives the milk and must be kept covered in a cool part of the house afterwards. Tinned and condensed milk is usually unsuitable for children.

I shall now speak of vegetables. Vegetables are often contaminated by the water used for their irrigation. After being gathered, they are often dipped into dirty tanks or streams on the way to market. In the market, they are often kept on dirty ground and are open to contamination by dust, flies, dogs and the water used to sprinkle them. You will see how dangerous it is to eat these vegetables raw. Proper

cooking makes them safe. If they are to be eaten raw, they must be washed thoroughly in boiled water. If cholera is present, only cooked vegetables should be eaten.

Rice alone is not sufficiently nourishing, but if mixed with ghee and meat (or dhal and similar foods in those who eat no meat), the mixture constitutes a good diet.

The rice should not be too new nor should it be mouldy or dirty from careless storage. All grains should be stored in a dry place carefully protected from rats and insects. When meat, dhal, eggs, etc., are made into curry by the addition of chillies and other hot substances and eaten with rice, the mixture is tasty and more easily digestible. Rice must be well cooked so as to be quite soft.

Fruit, if unripe or over-ripe, may cause indigestion and diarrhoea. Fruits sold in slices, such as melons, etc., may cause cholera after being exposed to dust and flies. Sweets which are handled and sold amidst dirty surroundings are likewise unsafe. Cooked rice and all kinds of food bought in dirty bazaars full of flies are dangerous.

There is no time to include all the different kinds of food but whatever kind of food you eat, remember that if you wish to keep healthy you must—

- (1) Eat a proper quantity of food.
- (2) Eat at regular fixed times. Eat slowly and masticate the food well.
- (3) Eat food which is sound and not that which is going bad.
- (4) Let only healthy persons with clean hands prepare and cook food.
- (5) Clean all vessels with boiling water before and after use.
- (6) Wash your hands before you eat.
- (7) Protect food from dust and flies.
- (8) Don't eat or keep food in a room where there is a sick person.

- (9) Don't keep food in rooms in which you live.
- (10) Keep your house and its surroundings clean so that there will be few flies and little dust.

Sanitation of Centres of Pilgrimage.

CHOLERA PREVENTIVE MEASURES AT PURI.—The outbreak of cholera generally takes place at Puri during the festival time. There are two well known festivals here, namely *Dol Jatra* which takes place in March and *Rath Jatra* (Car festival) which takes place in June. All the public as well as lodging house wells are disinfected with potassium permanganate a fortnight before each festival. If any cholera case occurs in any lodging house, the patient is removed to the cholera hospital and the room of the house which the patient occupied and the well of the compound are disinfected. If the patient dies there, his bed and clothings are either disinfected or burnt.

If two, three or more cholera cases occur in the same lodging house, the license of that house remains suspended for a week at least. The relatives, attendants and companions of the patient are kept under observation.

As regards food, special attention is paid to it. There is one permanent Food Inspector here; but during the festival time, one or two more Food Inspectors are appointed according to the necessity. They visit all the shops where food stuffs are sold and they have power to destroy all food in a state of decomposition and to prosecute the shop-keeper.

The waters of some of the tanks of the town are not good and it is very difficult for the pilgrims to know it and so special police guards are kept at the side of each of these tanks to inform the pilgrims not to use the water of the tank for drinking purposes.

During the festival time, extra mehters and mehtranees are appointed to clean the roads and streets of the town twice a day; and the latrines are also cleaned twice a day and washed with the solution of hypochloride of lime.

It is a strict rule here that cholera dead bodies should be cremated. In case of any unclaimed body, the Municipality bears the cost of cremation.

Infantile Mortality.*

There is perhaps no subject concerning which the enthusiastic medical officer of health feels more disappointment than with his comparative failure to reduce the rate of infantile mortality. In the face of a continually falling birth rate, due almost entirely to artificial methods of preventing conception and to the use of abortifacients much more commonly practised than is generally known and to the gradually increasing later age at which people get married in supposed conformity to social requirements, this is a very serious matter for the nation. In many districts, this has been considerably reduced along with the reduced general death rate, but by no means in adequate proportion. If any proof of this, further than the experience of all of us, were needed, perhaps I may be allowed to quote the following from Sir George Newman's most interesting and instructive book on Infantile Mortality. He says: "The infantile mortality is not declining. . . . Children under 12 months of age die in England to-day, in spite of all our boasted progress, and in spite of an immense improvement in the social and physical life of the people, as greatly as they did 70 years ago. . . . Experience makes it true to say that in England and Wales, out of 100,000 children, 17,139 will not live to their first birth day, and nearly 25,000 will succumb before their fifth, and the nation is suffering a dead loss every year of not less than 120,000 lives under 12 months of age." It will be generally admitted that the *chief causes of infantile deaths* are (1) prematurity and congenital defects at birth, including such terms as atrophy, debility and marasmus which altogether may be included in the term immaturity at birth; (2) diarrhoeal diseases; (3) respiratory diseases. In regard to measures dealing with the loss of infant life due to diarrhoeal

* From the presidential address read by James W. Smith, M.D., before the Northern Branch of the Society of Medical Officers of Health.

and respiratory diseases, I have nothing to say. They are due to generally well-recognised causes which are being dealt with, and will come more and more under control. But in regard to those deaths due to immaturity, there is need for greater consideration. The proportion of deaths from these diseases varies in different districts and in different seasons, but it is generally recognised that on the average, 30% of the total deaths of infants is the result of immaturity. In my own district, for the five years from 1909 to 1914 out of a total of 240 infantile deaths, 103 were the result of immaturity, which represents the high percentage of 42·9. The very great majority of these occur within the first three months of life; many of them within the first week; many even within a day or two. It is quite evident that no environmental conditions applied to the infant within our present knowledge can have any appreciable effect in diminishing this mortality. To do that, we must bring to bear such influences as affect the child in embryo from the time of conception to its birth—that is to say, we must affect the material environment of the developing child. We can only do this by discovering what environmental conditions we can bring to bear upon the mother that will bring about a better state of health in her, and through her in the child. This opens up a very wide subject, for it involves a consideration of the whole science of heredity not only as affecting the individual parents, but their ancestry; the transmissibility of disease, as part of the acquired characteristics of the parents; as well as the whole social environment, as regards the home and its surroundings, the conditions of labour, the poverty or affluence of parents, their habits as to morality, vice (especially sexual), alcoholism, and the hundred and one things of every-day social life. Now, apart from the effects of heredity (to which I hope to refer later on) and such conditions as too early marriage and syphilis, for which legislation is as yet premature, there are conditions that affect the mother during pregnancy which are found to influence the health of the child, and which,

though they have not hitherto been dealt with, are capable of being so, and are actually now beginning to be dealt with. These refer, for instance, to the industrial employment of women, in which is involved the question of the home and its surroundings, and the poverty or affluence of the parents. As showing the relation of poverty to infantile mortality, Dr. Robinson, Medical Officer of Health for Rotherham, has found that "in those cases in which the mother was employed in a factory, and the father was either out of work or earning less than £1, the mortality rate was 235 per 1,000, while where the father earned more than £1 the rate was only 146 per 1,000." Dr. Robinson adds "that industrial employment has a bad effect on the infantile mortality rate, principally because it interferes with breast feeding. But the influence of industrial employment is quite small when compared with the influence of acute poverty, and it would seem that in so far as the mother's employment reduces the acuteness of the poverty, it may even tend to lower the rate of infantile mortality. This is further borne out by statistics in Wigan, where with an infantile mortality of 166 per 1,000 practically no married women are employed in factories, whereas in the town of Nelson, where a very large proportion of the adult female population are so employed, the infantile mortality rate was only 87 per 1,000. Dr. Kerr's annual report just issued bears this out. He finds that the infantile mortality rate high in families living in one-roomed houses, gets less and less with the increase in the number of rooms occupied by families, the number of rooms being an index of the state of poverty or comfort of the parents.

As further showing the influence of poverty, in the city of Edinburgh, while the rate of infantile mortality in 1913 was only 101 per 1,000, with 26 in the Newingdom Ward and 46 in Morningside, in the Cowgate, occupied by the poorer classes living in narrow lanes and closes, and amidst insanitary surroundings, it was as high as 204 per 1,000. These conditions of poverty, occupation of the mothers in factories, too hard

work, and insufficient food, all influence the development of the foetus *in utero* and make it immature at birth, while the hygienic conditions into which it is born are necessarily such as tend to make it lose grip of the little hold of life it has. By the Notification of Births Act, with its array of health visitors and nurses and sanitary officers, directed as they all are to improvement of the environment, the chances of life of these immature children have been greatly increased. But it would be better still if the immaturity with which they are born could be rectified, and consequently the notification of birth implies ante-natal attention and care of the prospective mother during her pregnancy. This is now claiming the attention of sanitary authorities and boards of health. The National Insurance Act, with the medical benefits it brings to all insured persons and its maternity benefit, which brings greater comfort and attention to mothers when they most require it and enables them to stay from work till their health is re-established, tends to assist in reducing infantile mortality, and to render the mother more fit to breast-feed the child by improving her own state of health. But this is not enough. Educated public opinion, always the prelude to further legislation, is becoming more and more convinced of the necessity of preventing mothers engaged in factories and other works from continuing at their work up to the birth of the child. The time is coming soon when prospective mothers will be prohibited from work for two or three months before the time of their lying-up and for two or three months after it and when provision will be made to see that mothers are cared for in the way of sufficient nourishment, satisfactory hygienic surroundings, and of being trained in the care of the child, the health of the home, and in all the duties that pertain to motherhood. Even now the Local Government Board has sent out a circular authorising authorities to spend public money in the establishment of maternity hospitals and dispensaries, where without money and without price prospective mothers will be enabled to go for advice and assistance in all matters pertaining to their own

and their child's welfare. This is but a corollary to the Notification of Births Act, which has done and is doing a good deal for the welfare of infants; it is but carrying supervision of the child a little further back in its development to its ante-natal life. Is it not the logical outcome of this to carry it further back still, to its very beginning? This would bring her at once under the care of the health visitor and medical officer of health, who would be responsible for her welfare till her health was re-established, and for the welfare of the child all the time of its infancy and childhood. Records would be kept of the life history of every child from its birth, including such ante-natal observations as were possible till it began its school life. Then it would come under the supervision of the school medical inspector.—*Pub. Health.*

Infant Hygiene: Pregnancy and Maternity.*

Entire ignorance of the life a woman should lead during pregnancy and maternity, and complete disregard of the science of infant hygiene amongst the majority of Indian mothers, are factors which go a long way to contribute to high infant mortality. Every Sanitary Officer who has had something to do with visiting the streets and lanes in Indian cities will bear me out when I say that Indian mothers have been observed feeding themselves, and their infants at breast, on everything "going," often with the result that the infant's life comes to a premature end. All this can be remedied if only men in India do a little of their duty towards their own wives and daughters and impart to them the necessary education in elementary hygiene.

Nature is a cruel master; as you sow so shall you reap is her immutable law. Sanitary laws are promulgated with the object of so regulating the lives of the people that Nature's products, air, food and water, may be supplied to each and all in such a manner and under such conditions that the vital forces of every individual may be maintained at their maximum. I wonder how many of the Indian families keep that view before their mind's eye. The reply would be unfavourable in the case of a vast majority. The inevi-

* From a paper read by Dr. S. Rozdon, D. P. H., L. R. C. P., L. R. C. S., at the 3rd All-India Sanitary Conference held at Lucknow.

table result must follow in the shape of lowered vitality, increased susceptibility and consequently high mortality amongst children. Our duty as guardians of the public health is to put a stop to this high mortality by devising means which may suit the conditions obtaining in India. It is well known that the Panchayat System is still prevalent and dates its origin from time immemorial. That such a system does exist shows that the custom of forming societies in India, discussing social and religious questions in them, and abiding by their dictum is innate amongst Indians. Taking advantage of this sterling quality amongst the masses of India, I would propose the formation of Provincial Health Societies with branches in the different towns in India for the definite object of inculcating the knowledge of Nature's Laws and the fundamental principles of domestic economy and hygiene.

The times have changed and so has India; new lines of research have been opened up, new sciences have been born, old truths are seen in quite a new light, venerable dogmas are accounted as old wives' tales or flippantly disregarded as out of date. Amid all this innovation, the public are bewildered, legislators perplexed and I for one do not wish to add further to their bewilderment by recommending the constitution of separate societies for "prevention of cruelty to children" "the protection of women and children" a society each for "Anti-malarial" "Anti-tuberculosis" and "Quinine" "Prophylactic" purposes and so forth. The society I have proposed will include all the minor sanitary objects and, I am sure, the knowledge acquired by the Indian public through the agency of such an institution will give forth sparks enough to kindle the flames of a cleansing and purifying fire which will burn brightly and steadily through the length and breadth of the Indian Peninsula.

The above is a measure which is to be adopted mainly by the public themselves. The next question is what steps should be taken by Local Bodies and the State towards achieving the object in view.

India is the only country, I think, where women play a major part in the household economy and unless they come to the front, no good will ever result out of all our exertions for the betterment of an Indian home in point of sanitation. It is to them that we

must look for help. Women lead very gregarious lives in India. Therefore if one woman is influenced successfully, rest assured that through her you have spread your influence through a wide community of door-step acquaintances. For them there is no "close season" for babies and to them the babies are a subject of inexhaustible interest. We must educate them in the ways of looking after themselves and their children, particularly their infants. Much of this can be done by hardworking, tactful and sympathetic lady health-visitors. It is through such an agency only that we can attain our object and it is here that the Local Bodies and the Government should come to the rescue of the people.

To gain the ears of mothers, it is necessary again to appoint lady health-visitors who should go amongst them as their friends, educating them on simple sanitary questions and teaching them how to live healthy and keep their children fit. At the same time there is a large opening for trained voluntary workers as well, who would act under the Public Health Department. There is indeed a large scope for women who want an outlet for philanthropic energies to carry out the work, each being given only a few houses on which to concentrate their attention.

The duties of such voluntary and paid visitors will, of course, be to wage a war against ignorance and quackery, superstition and prejudice, and to preach the doctrine of preservation of infant life in every household. Sympathy with our fellow-beings is the key to success, and the time has come when we can do something towards the diminution of these appalling death-rates by introducing into our work against the dry materialism of this world a little more of the elevating influence of human sympathy.

Sanitary Engineering.

AT a meeting of the Institute of Sanitary Engineers held at Caxton Hall, Westminster, on the 6th January, 1915, Mr. A. P. I. Cotterell, M. INST, C. E., F. R. SAN. I., delivered his presidential address, in which he reviewed the progress made by Sanitary Engineering during the last four or five decades. Mr. Cotterell said: The day when the sanitary reformer was brushed aside as an impossible idealist is long since past. Sanitation is now recognised as essential to the

world's well-being, and those who practise it as an integral and indeed to a large extent as an official part of the nation. It has saved the lives of hundreds of thousands, and has built up strong manhoods where formerly weakness and disease would have flourished. Man is a gregarious animal, and, whether in city or village, we are becoming more and more dependent upon efficient sanitation. We might even call sanitary engineering the handmaid of civilisation, so necessary is she wherever civilisation spreads.

But if sanitary engineering has been recognised in peace, no less has it found its place in time of war. The experience of recent years has taught the great importance of sanitation and how much suffering and death may be prevented by its aid. So much is this the case that sanitary detachments are now a recognised adjunct of the Army. We are glad to know that one of our valued ex-presidents and many members of the institute are serving their country in this beneficent capacity. It is a satisfaction in these days of human slaughter—without precedent in history—to realise that sanitary engineering plays an important part, not in destruction, but in preventing or at least reducing some of the awful miseries of war. Somebody has said that much of the trouble in which Europe is now involved is due to our bowing down to the 'little tin god of progress'. I suppose he meant that we have measured our steps too much by material rather than by moral progress. Still in sanitary work there is no such distinction. Material improvement in this direction is immediately followed by moral gain. The provision of a public water-supply or the drainage of a town may seem a prosaic piece of work, but there follows inevitable a higher standard of cleanliness among the inhabitants; a widening of the social and moral outlook; and a confirmation of the axiom that "cleanliness is next to godliness."

Dealing with the subject of sewage disposal, Mr. Cotterell said: In the department of sewerage and sewage disposal even greater advance has been made than in water-supply. In

one sense the art of sewage disposal may be said to have been created in the last forty years. I do not mean that before this period very little was known of the principles of sewage disposal, for I am one who holds that the past has much more to teach us than we are generally ready to admit. But there has been material advance with more and more confident step. Forty years ago only the larger towns possessed a sewage system; now many of our villages are provided. Then the disposal of sewage was at the best embryonic, except in a few enlightened instances; now we can design disposal works with practical certainty that they will fulfil the purpose intended if properly looked after.

As my predecessor pointed out last year, there is still much to be done in sewage disposal. In this brief survey, I cannot attempt to go into detail, but I may refer to one or two directions in which work is being done and where more ground yet remains to be covered. One of them is in the elimination of smell. This, the bugbear of the sewage works manager, is often the protest of badly laid drains and sewers crying aloud for remedy. Various appliances have been introduced upon the sewers with the object of deodorising or destroying the offensive constituents of sewer gas, some of them distinctly ingenious in their character. The question of smell was dealt with in the fifth report of the Royal Commission on sewage disposal, but no satisfactory process can be said to have arisen as a consequence. The only one mentioned—viz., the introduction into the sewage of oxychloride—was so expensive as to make it prohibitive for any but extreme cases. Lately, however, efforts have been made to revive a practice advocated nearly thirty years ago of blowing air into the sewage. Mr. J. D. Watson, in a communication to the last Congress of the Royal Sanitary Institute, recounts some experiments undertaken by him in this direction, which appear to promise a measure of success, the basis of the proposal being the saturation of the sewage by air blown in under pressure to prevent the formation of sulphuretted hydrogen gas.

It is in the utilisation of sludge that the greatest activity is at present being shown. After the disappointments and losses that have been the lot of investigators in years past, it is not surprising that a few years ago the search was almost given up, and every effort made to get rid of sludge in the quickest and cheapest possible way. But "hope springs eternal in the human breast," and the very failure in a field that ought to be conquered has led others to renew the attack.

The notable success of Bradford in transforming the greasy constituents of its sewage into a source of revenue has had an effect in drawing attention once more to this wasted source of national revenue. At Bradford, I understand, the recovery of fats produces so large an income that much of the annual upkeep of the works is thereby paid for, and the authorities go out of their way to encourage the introduction of trade wastes from the factories into the sewers.

I have had occasion recently to examine professionally a method of sludge utilisation that is being worked, by a company who have lately erected a plant at Wimbledon capable of dealing with 25 tons of sludge per day. This undertaking boldly sets out to recover the valuable constituents of the sludge, and claims that effective uses can be found for all of them.

The sludge to be treated is first sprayed with petroleum; it is then distilled in retorts arranged in two series at increasing temperatures. Chemical changes are thus effected on the organic matter, oils, ammonia and gas being produced, while a carbonaceous residue is left in the retorts. The petroleum used is recovered with the sewage oil. The promoters claim that a profit can be made from the sale of the resultant products—oil, pitch, ammonia liquor and carbon residue. The crux of the process lies in the use that can be made of the latter constituent. It is valuable in a number of manufactures varying from electrodes to printer's ink and it may be used as a precipitant of the raw sewage itself. By repeatedly

precipitating raw sewage with the residue and distilling the sludge cake, the phosphoric acid content is increased, so that after use, say, three or four times, a valuable manure is obtained. Another feature claimed is that by such precipitation the effluent is so clarified that work to be done in subsequent filtration is reduced.

Manchester has just brought to our notice still another process. It has several points of novelty in that it proposes so to perfect the preliminary or tank treatment of sewage as to do without filtration altogether.

The proposal is certainly interesting. By blowing air under pressure into sewage sludge, or, better still, into the slurry or humus obtained from filter and contact beds, an oxidised or activated sludge is obtained containing a high percentage of nitrogen and capable, when mixed with raw sewage in the proportion of 1 to 4, of rapidly precipitating the latter, the whole contents being all the while subject to æration from air blown in either through pipe tuyeres or through porous tiles. A plant has been installed at Salford to deal with 100,000 gallons of sewage a day and it is found that after three hours æration and one and a half hours æration settlement, the resultant effluent is so good, judged by the absorbed oxygen and nitrate tests, that no filtration whatever is required, but merely ponding before discharge.

One of the most interesting features is that the sludge, when thus oxidised, appears to be capable of acting upon sewage much in the same way as an aerobic filter. At the same time by activation, the collodial matter is brought down, and the sludge is thus enriched to three times its former manurial value, and made capable of being used as a fertiliser after it has been reduced in bulk by drying.

I have outlined the above proposals to show the keen attention now being devoted to this phase of sewage disposal. All of them, it will be seen, aim more or less directly at restoring to the land some of the nitrogen that we are now so

wastefully throwing into the sea, whence we only get a return and that to a very limited degree, from the fish caught.

Land Reclamation.

Mr. A. D. Furse of the Patent Lightning Crusher Co. Ltd., writes to the Municipal Journal:—

As I understand that the Development Commissioners have asked county councils to prepare schemes for the reclamation and cultivation of waste lands, and proprietors of such lands have been requested to communicate with agricultural colleges, I take the liberty to ask you kindly to publish in your columns the following notes which may be of use to persons and Corporations concerned. The easiest and most natural way of reclaiming waste lands is by giving back to the earth what came from the earth, *i. e.*, by digging into the soil our daily refuse. The system, however, of digging into the soil crude house and town refuse is subject to three main disadvantages; (1) soiled paper and light refuse are liable to be blown by the wind and protests against this nuisance, if nothing stronger, have been lodged against Municipal authorities in Scotland and elsewhere; (2) crude house and town refuse if left about in heaps or even when spread out gives a disagreeable nauseating and unhealthy smell; (3) however deeply house refuse is dug into the soil such substances as broken glass and crockery have a knack, after the soil has been ploughed, of coming to the surface disfiguring the land and causing injury to the horses and cattle and even to men.

All these disadvantages can be eliminated at once by passing the refuse through a machine called "a patent lightning dust-manipulator," which is a specially constructed disintegrator and mixture combined. The refuse thus treated is reduced to a uniform mass of the appearance and consistency of mould, from which it is scarcely possible to distinguish it. The whole of the substances composing the refuse are thoroughly amalgamated, so that there remain no solid paper or other light material to fly about. The refuse is also deodorised by the action of machine, the only smell that it gives being like that of earth, and the pieces of glass and crockery are reduced to a harmless powder. Tin and iron utensils and boot leather are sold separately at a good profit.

This mould contains besides a certain percentage of lime, the three plant foods necessary for the fertilisation of the soil in much greater proportions than farmyard manure.

A chemical analysis and report by the East Anglian Institute of Agriculture gives the following comparison between house refuse manure passed through a patent lightning dust manipulator and farmyard manure :—

	Lbs. of Nitrogen.	Lbs. of Phosphate.	Lbs. of Potash.
1 ton of good farmyard manure contains.....	10-15 ;	19-23 ;	10.
1 ton of house refuse manure contains.....	18 ;	52 ;	11- $\frac{1}{2}$.

It is true that the nitrogen in house refuse manure is more slowly absorbed by the soil than that of farmyard manure, but, on the other hand, the latter is more apt to deteriorate owing to the great amount of moisture in it, and the action of refuse manure lasts much longer over two or three years.

The above mentioned treatment reduces house refuse to about two-thirds of its original bulk, a valuable consideration in the calculation of transport.

Another advantage is that house refuse manure can be stored in heaps in the open, as it very soon forms an oxidised crust which soon becomes practically waterproof and on which flies do not alight, while we know what a source of flies farmyard manure is.

This system of reducing house refuse to a presentable fertiliser is no longer a novelty ; a number of local authorities, such as Southwark, Halifax, Bispham, Blackpool, Hove, Glasgow, etc., having had it in use, some of them for some years. The Metropolitan Borough of Southwark doubled its plant after a year's trial, and now the Corporation of Hove has passed a resolution to quadruple its plant.

The machine takes very little room, is relatively inexpensive and causes no nuisance of any kind.

Farmers who have used this mould as manure recommend it for wheat, mangolds, swedes, cabbages, potatoes, hops, roots, turnips, fruit trees, meadowland, in fact, for any crop. Tomatoes grown in it are larger in size, richer in colour, and sweeter in flavour.

Bulbs grow luxuriantly in it ; it is also good for flowering plants, a florist grows show-chrysanthemums in it to his great satisfaction. The carriage and spreading of this manure over waste land would give work to a number of unemployed and land that has been utterly useless would at a very small expense be rendered by this system worth a good deal of money.

I shall be happy to give any officials or land-owners any information they may wish to have on the subject.

Turning Refuse into Wealth.

The problem of the economic disposal of household and street refuse is a difficult one in towns and cities. The dust-destroyer has superseded the dangerous process of dumping and distributing the malodorous matter upon open land, but while the heat generated by combustion may be turned to useful account in the production of power, the disposal of the clinker is another problem. The dust-destroyer is far from being an economic method of refuse disposal. The domestic dust-bin is a heterogeneous collection of debris ranging from vegetable and animal waste to tins and other metallic odds and ends. The civic authorities of San Francisco have recently installed a plant and system for the purpose of extracting all economic matter from the waste, and subsequently turning the residue itself into a remarkable article. Oil in various forms abounds in general refuse and its reclamation is profitable. The authorities have introduced a service of motor-driven collecting vans, each of 5 tons capacity, whereby the refuse is collected during the night. Upon arrival at the plant, the trucks, which are detachable are released, and raised to the top of the building, and the contents are dumped into the huge kettlers or hoppers, to be subjected to a boiling process for five hours. The pulp then passes into huge presses, where all the greasy matter and water is expressed. The oily matter collecting upon the surface of the water is skimmed off and retained. As the pressed matter is by no means dry, it is driven on a helical screw through rotary boilers, whereby oil moisture is evaporated. Then the mass passes to other tanks charged with petrol, which dissolves and absorbs all the remaining grease and oil. The macerated mass is then submitted to drying process and passed along a conveyer beneath powerful magnets, which extract all the

metallic materials, such as nails, pieces of tins, nuts, screws, etc. The pulp is now shot into pulverisers where it is ground up, mixed with chemicals, and exuded in a finely-divided form, somewhat resembling powder. As bones and other valuable fertilising agents are crushed in this action and combined with the other matter, the residue constitutes an excellent fertiliser, which finds a ready market. The petrol, laden with greases and oils, is subjected to a simple distillation into a refinery, whereby the petrol is reclaimed to be re-used, while the oils and greases are separated or divided into their commercial values.—*Cham. Jour.*

SALFORD CORPORATION AND THE MAKING OF SLABS.—Members of the northern section of Institution of Mechanical Engineers paid visits on Saturday to the Salford flag-making plant at Agercroft and to the Corporation electricity works. They were received at the Agercroft works by Alderman J. Hulton, Chairman of the Lighting and Cleansing Committee, and saw the process by which the town's refuse is converted into valuable flag-slabs for use in making street side-walks. Mr. Hamblett, the Superintendent of the department, showed how an ornamental wall, built on the premises and having all the appearance of grey granite stone, is in reality chiefly composed of gasworks clinkers and quarry residuals. He prophesied that the development of this process of converting refuse into strong, clear, and useable stone would bring about something of a revolution in the building trade. Already one garden city in the south of England was entirely built of this clean artificial stone, but in Salford they intended to install a plant which would be an improvement on the stone already manufactured and at the same time be more economical. They would, he expected, be able to produce a strong, clean, and white stone for all building purposes almost from the clinkers from the refuse destructors alone. They hoped, before long, to do such a large trade in this department that they would be able to give considerable sums to the relief of the rates, besides providing material for cheap, clean, and healthy houses.

Water Supply.

Jherria Coalfields Water Supply Scheme.

A very severe outbreak of cholera in the Jherria Coal Field during April-May, 1913, led to an enquiry into the cause of the outbreak. The enquiry showed that many of the collieries were being worked under very insanitary conditions. A common method of obtaining the water supply of the lines in which labourers live is to pump it up from a sump at the bottom of the mine in which the drainage from the galleries collects and which is liable to be contaminated with human excrement. This water is conveyed by an open channel from the pit-head into a surface tank in which the coolies bathe and wash and from which they draw water for drinking. Only in a very few cases is any attempt made to filter the water or to purify it. The result of this highly insanitary condition is that outbreaks of cholera are continually occurring in the coal field which cause a heavy mortality among the labour force and seriously disorganise the work. The following is a brief description of the scheme which has been drawn up to bring water from a reservoir at the base of the Pareshanath Hill and to deliver it in pipes throughout the coal field. The scheme has received the sanction of Government. A Mines Board of Health has been appointed and applications have been invited for the appointment of a Chief Sanitary Officer on a pay of Rs. 1,200 rising to Rs. 1,500 a month, with a free house or allowance in lieu of it. By these measures it is expected that a great improvement will be effected in the sanitary condition of the area. We are indebted to Mr. G. B. Williams, Sanitary Engineer of Bengal for the description of the Scheme.

The area it is proposed to supply is practically coterminous with the coal fields. Dhanbaid is not at present included in the scheme but the main service reservoir is high enough to supply Dhanbaid if it is subsequently considered desirable to do so, and it is found that enough water can be spared. In any case it may be worth while supplying a small daily quantity sufficient for the official bungalows and offices there.

The quantity of water to be supplied is 2,400,000 gallons per day which will provide for an ultimate population of 200,000 persons at the rate of 12 gallons per head.

2. The source of supply will be a reservoir which will be constructed on the north side of the Grand Trunk Road, about $1\frac{1}{2}$ miles from the village of Topchanchi. This reservoir will be formed by damming up a valley situated between two of the southern spurs of the Pareshanath range. It will be fed by a catchment area of nearly 3000 acres, consisting mainly of steep wooded hills. The rainfall on these hills is comparatively high and the average fall has been ascertained to be over 60 inches *per annum*. Of this about one-third will be collected and stored each year in the reservoir which is to have a capacity of about 950,000,000 gallons representing, after deducting losses from evaporation, nearly a year's supply for the population to be served.

3. The dam is to be a solid masonry structure 900 feet long and 80 feet high to the top of the parapet. The centre portion will be constructed of large blocks of stone quarried on the watershed, set in hydraulic mortar and the face work will be of Katras stone. The local rocks are dark blue and grey horn-blende schists and gneisses and are eminently suited for the hearting but are very hard and expensive to dress to exact beds whilst the Katras stone is a very good stone for this purpose. The dam will be crossed by a bridge carrying a road 10 feet wide supported on piers built up on the masonry of the main dam. Underneath the bridge there will be a

waste weir 450 feet long. The outlet valve tower will be an octagonal castellated structure forming part of the main dam.

4. The reservoir above the dam will be a lake nearly a mile long and little over half a mile wide. The greatest depth of water will be about 65 feet. Around the lake there will be a cart road which will be carried over the stream at the top and by a trestle girder bridge.

5. Immediately below the dam there will be 6 sand filters through which the water from the reservoir will be passed before flowing to the coal fields in order to remove any vestiges of contaminating matter which may remain in it. These will be operated at a moderate rate and will be fitted with an accurate regulating and a gauging apparatus.

6. After passing through the filters the water will be discharged into the main supply conduit leading to the service reservoir. For about 5 miles the line of the aqueduct follows approximately the contour of the hill sides and will be a brickwork conduit along which the water will flow by gravitation. Near Topchanchi a low ridge will be crossed by a tunnel and there are one or two small valleys which will be crossed by pipes. In the last $7\frac{1}{2}$ miles the aqueduct dips down into the Katri valley and for the whole of this distance will be composed of steel pipes. The Katri river is to be crossed by a single arch bridge 116 feet span and 10 feet raised above flood level, the chief members of the arch being formed by the pipes themselves.

7. The pipe line will discharge into a service reservoir holding about 4,000,000 gallons, situated on the low range of hills near Tilatand. This reservoir is at sufficient height to command the whole of the supply area, and also Dhanbaid, if necessary. This reservoir is to be constructed of reinforced concrete.

8. The lines of the distribution mains have been fixed after careful examination of the ground and are the best so far as can be now judged. It may be found necessary to

change some of the lines before laying the pipes and the position will have to be finally decided by the Water Board. The trunk mains will however have to go along the roads where they are shewn, for there are no other practical alternatives.

The pipes larger than 6 inches diameter are to be of steel, the smaller branches will be made of cast iron. There will be separate metered connections to all the colliery properties and the people in the towns and villages will be supplied through standposts in the streets.

There will be 3 rivetted steel circular subsidiary service reservoirs situated in the supply area at Jherria, Godhar and Basjori, respectively. The object of these is to equalise the draft in the mains between the Tilatand service reservoir and the more populous centres. By balancing the rates of supply and demand these reservoirs will enable considerable reductions to be made in the size and cost of the mains.

9. The final estimate of cost is Rs. 31,11,676 and the working expenses are estimated at Rs. 24,000 per annum.

Water Supply Scheme for Cuddalore.

THE Sanitary Engineer formulated proposals for a water-supply for the town of Cuddalore with Ponniyar river as the source of water-supply. This proposal, which has the approval of the Sanitary Board, consists of an infiltration gallery in the bed of the river, with collecting wells. The water from these wells is taken by means of pipes to a suction well on the bank of the river, wherefrom water is pumped by means of a pumping main to a service reservoir to be built on the Capper hill, about 100 feet above the level of the sea, and at a distance of about 6 miles from the pumping station to its south. The water from the reservoir is then distributed by means of separate distributing mains, by gravitation.

The hill is located somewhat centrally just on the outskirts of the Municipality, with Cuddalore Old Town on

one side (that portion of the town which suffers most for want of good drinking water) and the several groups of villages comprising the rest of the Municipality and Cuddalore New Town on the other. The scheme provides for a population of 70,000 at 10 gallons per head, the population of the town according to the last census being 56,574. The cost of the scheme as estimated at present is Rs. 7,66,000.

The Chief Engineer to Government recommends that an infiltration gallery 200 feet long with a collecting well be put up at once and water from the well be pumped for 3 months to test the yield. This trial is estimated to cost Rs. 19,750 and the Government have directed the Municipal Council to place at the disposal of the P. W. Department the sum of Rs. 10,000 set apart by the Council as a reserve for the water-supply scheme, towards meeting the cost of this experiment.



Drainage.

**Calcutta Canal Area Drainage Works inaugurated
by His Excellency Lord Carmichael, on the
20th January, 1915.**

THE Calcutta Canal Area Drainage works have an interesting history. What is known as the Canal Area of Calcutta is bounded by Upper Circular Road on the west, the Circular Canal on the east, Shambazar on the north and Sealdah on the south, and it comprises about 432 acres. This area is low-lying and has always been the most insani-tary part of Calcutta. The problem of draining it is a parti-cularly complicated one, and that is probably the reason why the sewerage of this area was taken up last in the drainage programme of what is known as the Added Area of Calcutta. The drainage of the Southern Suburbs, which was inaugurat-ed by Sir Andrew Fraser in 1906 covered an area of 3,922 acres and cost some seventy lakhs of rupees. The Canal Area drainage scheme, though it covers less than a ninth of the area, is costing about 44 lakhs of rupees.

The first schemes which were considered for dealing with the drainage of this area were the Shone's pneumatic system and the hydraulic pumping system, both of which were found unsuitable. In 1905, during the Chairmanship of the late Sir Charles Allen, the present project for draining direct to the city outfall at Palmer's Bridge was first put forward. It was very carefully examined both with reference to efficiency and cost, and was finally sanctioned by the Cor-poration and by Government in 1907 and the work was commenced in November, 1908. The project was subse-quently enlarged by the addition of a scheme for constructing

new roads along the lines of the sewers, which was sanctioned by the Corporation in 1909 and by Government in 1910. All the sewers have now been constructed after overcoming various difficulties and the roads are nearing completion.

The area to be dealt with is so low-lying that it is not possible to drain it by means of one continuous sewer, and it has been necessary to construct a low level sewer terminating at this Pumping Station and then to raise the whole discharge 9 feet by pumping into a high level sewer running direct to Palmer's Bridge where it is pumped again into the drainage outfall. The low level sewer varies in diameter from 15 inches to 6 feet—6 inches and the high level sewer from 6 feet 6 inches to 10 feet. The length of the main and branch sewers are about 3 miles and 13 miles respectively, and about 5 miles of new roads, partly 90 feet and partly 40 feet wide, have been constructed. One of these roads is lit with electric light instead of gas as an experiment. About 126 bighas of bustee area have been acquired and the bustees removed at a cost of 19 lakhs of rupees, and a large amount of tank filling and raising of low lands has been carried out. These improvements have produced a marked effect upon the sanitation of the neighbourhood, and the death rate in this area has already fallen considerably. The Corporation have begun to reap the advantages of the scheme in the high prices which have been obtained for the surplus land acquired, and it is hoped that this will go a considerable way towards meeting the cost of the scheme. It can hardly be said that even now the Canal Area is a credit to Calcutta, but adequate drainage is the first step on the road to improvement, and it is hoped that in the course of a few years this area will develop into a healthy and well laid out manufacturing district.

There is another portion of the city which will be greatly benefited by this drainage scheme; that is, the area in the neighbourhood of Amherst Street and Cornwallis Street, which at present suffers greatly from flooding during the monsoon season. This area is drained by the Machuabazar

Street and Sukea Street sewers, which did not obtain a free flow into the main city outfall running along Circular Road during times of heavy rainfall. Both these sewers have now been cut off from that outfall, syphoned under it and connected to the Canal Area high level sewer. It is confidently expected that this will result in a great reduction of the flooding in the Amherst Street and Cornwallis Street area, though owing to the low-level of this portion of the city, it is impossible to prevent flooding there altogether. The sewers are capable of carrying off heavy showers of 1 to 1½ inches per hour, which in most countries would be considered an enormous capacity, but in Calcutta we occasionally have 3 inches of rain in 20 minutes, which no sewers could possibly deal with. Complaints are sometimes made about the drainage of Calcutta because flooding occurs perhaps 3 or 4 days during the year, and under the conditions which prevail here, it is absolutely impossible to prevent this. No sewers could possibly be constructed which would carry off rainfall at the rate of 9 inches per hour, and the most that can be done is to provide for the normal maximum, which has been done.

It is in the neighbourhood of this Pumping Station that most of the difficulties in connection with the scheme have been experienced. It was originally intended to build the Pumping Station near Bahir Mirzapore Road about 1,400 feet further south, but during the construction of that portion of the low-level sewer running sand and water poured into the trench in volumes which it was impossible to deal with. It was ascertained by chemical experiments that this water came from the Circular Canal some 800 feet distant, and it was decided to move the Pumping Station to its present position. Trial borings indicated that the soil was fairly good here, but when the work was commenced it was found that there were numerous layers and springs of running sand and water. Some idea of the treacherous nature of the soil can be gathered from the fact that borings were sunk 40 feet deep in good clay without any indication of water trouble and within only

18 inches of them soil was found to be nothing but sand and water which was impossible to work in. The first difficulty was the construction of the intake chamber of the Pumping Station. After trying the ordinary methods in vain it was decided to build this on six masonry wells sunk on steel kerbs. This work was done by Babu Kali Sunker Mitter under a contract by which he was to receive no payment unless the wells were successfully sunk and proved absolutely sound and water-tight. He carried out the work in a most creditable manner and with complete success. The superstructure comprising the pump chambers, the engine room and the Superintendent's quarters, were subsequently erected by Babu Benode Behary Sircar. The pumping plant was supplied by the Worthington Pump Co., and consists of a suction gas plant with five Crossley's gas engines actuating vertical centrifugal pumps through helical gearing. The plant is capable of lifting 36,000 gallons per minute.

The main work of constructing the sewers and connecting them with the intake chamber of the Pumping Station was carried out by Messrs. Martin and Co., of Rangoon. They completed the low-level sewer to within 70 feet of the Pumping Station with very little difficulty, but when they came to join it up with the intake chamber a large sand spring burst through the concrete bed. It was found impossible to deal with this by means of pumping, and the excavation had to be completed and concreted under water with the aid of divers. After this had been done another large spring was encountered a little further on and it was decided to complete the remaining gap to the existing sewer by sinking wells. This was done and it was thought that the difficulties have been finally overcome, but it was found that the operation of well sinking had caused the sewer already completed on the north to fracture and sink 2 feet. In order to lessen the risk of causing further damage to already constructed work by attempting to reconstruct these lengths of sewer in pumped out trenches, the Works Special Committee, on the

advice of Mr. Ball Hill, decided to box them within inter-locking sheet steel piling. The already built masonry of the sewer had to be first cut across at each end of the trench by boring tools. The trench was then boxed in with inter-locking steel piling driven 34 to 41 feet below ground level. This enabled the damaged work to be taken out and the bed to be successfully concreted in a pumped-out trench,—but only just in time, for during this operation small springs appeared through the sand and the trenches had to be immediately flooded in order to allow the concrete to set before again dewatering and completing the masonry of the sewer. The steel piling at each end of the trench had afterwards to be withdrawn. The ends of the sewers beyond were then joined up underwater with the assistance of a diver and the joints reinforced with steel troughs and expanded metal. The difficulties were even then not overcome, for, an hour and a half after the section on the north of the wells had been joined to the existing sewer, the latter suddenly dropped 3 inches at the joining point and fractured across some 25 feet beyond this length, having evidently become gradually undermined. This further length of 25 feet had then to be dealt with and the question arose how to reach the existing sewer successfully without causing further damage to it. Steel piling was a most costly method, and the engineers decided to try the experiment of underpinning the 25 feet already damaged as well as a length of 10 feet beyond it. This was effected whilst the work remained submerged by drilling holes 3 ft. 6 inches apart through the masonry sides of the sewer and sinking steel tubes through these holes into the subsoil below the bed of the sewer. These tubes were then filled with hydraulic lime and served as supports to the sewer. They were sunk with great difficulty, but they fulfilled their purpose and it was found that the sewer was securely held in position. On dewatering the trench however, the masonry of the 25 feet length was found to be dangerously cracked and it was decided to build in 42' and 18' diameter cast iron pipes, the former for storm water and the

latter for sewage flow. The fixing of these pipes completed the connection, the difficulties experienced having delayed the work for nearly two years.

Great credit is due to Mr. MacCabe, the Chief Engineer of the Corporation and Mr. Ball Hill, the Executive Engineer, Drainage, for the successful completion of this difficult work. Mr. Ball Hill in particular has met and overcome difficulty after difficulty, where most men would have despaired long ago. He was constantly on the work and without him the scheme would probably have had to be entirely re-designed at a very great cost. Messrs. Martin and Co., of Rangoon, the contractors for the work, also call for special mention. Their resources were tried to the utmost, but they stuck to the work and finally brought it to a successful completion. The excellent work of Babu Kali Sunker Mitter, who constructed the masonry wells for the Pumping Station, also deserves special mention. The Works Committee of the Corporation must also be thanked and congratulated for the part which they took in the completion of this project. They made several inspections of the work and they were always helpful under difficulties instead of being merely critical, as Committees are sometimes a little apt to be. In fact they worthily upheld the Corporation motto "*Per ardua stabilis esto.*"



New Water Supply and Drainage Schemes.

[MADRAS.]

The Editors invite the co-operation of the Local Bodies with a view to give complete and accurate information regarding the progress of the schemes.

The following statement shows the stages reached on the 1st January 1915 by the several water-supply and drainage schemes under investigation. It will be seen that plans and estimates for 10 water-supply and water-works improvements schemes and 2 drainage schemes are ready for execution. Plans and estimates are under preparation for 6 water-supply and water-works improvements schemes and 13 drainage schemes. 21 schemes are under investigation.

Serial number	Name of town.	Nature of scheme.	Present stage of the scheme as on 1st January 1915	Amount of estimate (approximate in those cases in which the scheme is not worked out in detail).
<i>1.—Schemes for which plans and estimates are ready.</i>				
1	Gudur	Water-supply ..	The work of sinking the suction well ordered in G. O. No. 1892 W., dated 21st December 1912, is nearing completion. The District Board has accepted the proposal of Government in regard to the initial and annual maintenance cost of the scheme.	Rs. 1,13,000
2	Bellary	Do. ..	Orders are awaited on the scheme forwarded with this office No. 579 G., dated seventh September 1914. Scheme postponed for the present— <i>vide</i> G.O. No. 2452 M., dated 9th December 1914.	11,00,000

3	Kumbakonam ..	Do. ..	(i) In G.O. Mis. No. 2340 M., dated 30th November 1914, Government have approved of the proposal of the Municipal Council, Kumbakonam, to defer the sinking of a second borehole until the extension of the pipe lines from the existing borehole has been carried out. (ii) The scheme for extending the distribution from the borehole has received the approval of Government in G. O. No. 2262 M., dated 17th November 1914 and awaits the technical sanction of the Public Works Department for execution.	2,00,000 (final scheme).
4	Tuticorin ..	Water-supply (partial scheme).	(i) As ordered in G.O. No. 710 M., dated 7th April 1914, an estimate for substituting iron pipes in place of the existing conduit which has been found to be leaky and defective has been received from the Deputy Sanitary Engineer, South and West, and is under scrutiny by the Sanitary Engineer. (ii) Also all possible sources of supply are, as required by Government, being freshly examined by the Sanitary Engineer and a report has been called for by Government, from the Executive Engineer, Tinnevely division, as to extent of supply available from the Korampallam tank.	... ....
5	Palni ..	Water-supply ..	The scheme returned to the Deputy Sanitary Engineer, South and West, for reconsideration as to the feasibility of a gravitation supply and also for the preparation of an estimate for carrying out a full power test has been received back and is being examined by the Sanitary Engineer. Orders are awaited on the report sent with this office No. 344 G., dated 15th May 1914.	3,53,000
6	Conjeevaram ..	Water-works improvements.		2,27,000

Statement of report of progress of water-supply and drainage schemes under investigation as on 1st January 1915—*contd.*

Serial number	Name of town.	Nature of scheme.	Present stage of the scheme as on 1st January 1915.	Amount of estimate (approximate in those cases in which the scheme is not worked out in detail).
				Rs.
7	Adoni ..	Water-works improvements.	The Deputy Sanitary Engineer. North and Central, reports: "Plans and estimates for proposals to augment the existing supply were returned by the Chief Engineer in Public Works Department Memorandum No. 809 Wks./A-1, dated 27th July 1914, for further test and data which are being collected".	25,969
8	Vizagapatam ..	Do.	Orders are awaited on the plans and estimates for proposals to augment the existing supply which were returned to the Chief Engineer, after supplying further information with this office No. 646 G., dated 29th September 1914.	75,500
9	Guntur ..	Do.	Plans and estimates for proposals to augment the supply were returned by the Chief Engineer calling for further borings which are in progress.	1,09,120
10	Tanjore ..	Do.	Plans and estimates for augmenting the supply have been received from the Deputy Sanitary Engineer, South and West, and are under scrutiny with the Sanitary Engineer.	1,67,000
11	Ootacamund ..	Drainage (improvements to the main sewer).	Plans and estimates have been returned by the Chief Engineer to carry out further tests which will be done shortly by the Deputy Sanitary Engineer. North and Central.	2,60,000

12	Do.	..	Drainage (septic tank improvements).	On the plans and estimates forwarded with this office No. 238 G., dated 30th March 1914 the Sanitary Board in Proceedings No. 715/S., dated 13th August 1914, have resolved that results of further analysis should be awaited. A joint inspection has been carried out at the request of the Chief Engineer.	..	2,00,000
<i>II.—Schemes for which plans and estimates are under preparation.</i>						
13	Chittoor	..	Water-supply	..	The Deputy Sanitary Engineer, North and Central, reports: "Plans and estimates have been completed and will be forwarded on 19th December 1914." Plans and estimates since received are under scrutiny by the Sanitary Engineer.	..
14	Hindupur	..	Do.	..	In Local and Municipal Memorandum No. 5598-1 L., dated 18th November 1914, the Sanitary Engineer was requested to submit an estimate of the cost of carrying out the experiments suggested by the Sanitary Board in Proceedings No. 942/S., dated 28th October 1914. The same has been called for from the Assistant Sanitary Engineer on Special Duty.	..
15	Tuticorin	..	Water-supply (separate scheme).	..	As ordered in G.O. No. 1632 M., dated 27th August 1914, the Deputy Sanitary Engineer is drawing up plans and estimates for a separate scheme of water-supply from the Tambraparani river. The Chief Engineer has in his Memorandum No. 1204 Wts./B-4, dated 2nd December 1914, called for further report on the reliability of the source before drawing up plans and estimates, which will be forwarded shortly. But as the plans and estimates are nearly drawn up it is not considered advisable to defer their completion as they have been called for by Government and the question of the reliability of supply can, it is thought, best be considered by the Chief Engineer if the final proposals are shown to him.	..

Statement of report of progress of water-supply and drainage schemes under investigation
as on 1st January 1915—*contd.*

Serial number.	Name of town.	Nature of scheme.	Present stage of the scheme as on 1st January 1915.	Amount of estimate (approximate in those cases in which the scheme is not worked out in detail.)
16	Cuddalore	Water-supply ..	<p>The scheme is being revised by the Deputy Sanitary Engineer, South and West, on the lines suggested by the Chief Engineer in his note, No. 219, dated 18th June 1914, embodied in Sanitary Board's Proceedings No. 617-S., dated 9th July 1914.</p> <p>An estimate amounting to Rs. 19,750 for carrying out full power tests in connection with the scheme has been sanctioned and will be forwarded to the Chief Engineer.</p> <p>The Deputy Sanitary Engineer, North and Central, reports: "Yield tests ordered in Public Works Department Memorandum No. 8087 C., dated 30th October 1913, have been carried out and revised plans and estimates for improvements will be forwarded on 19th December 1914." Plans and estimates since received are under scrutiny by the Sanitary Engineer.</p> <p>The Deputy Sanitary Engineer, South and West, reports: "The preparation of plans and estimates for augmenting the water-supply during the hot weather by an infiltration gallery below the bund of the Panamarathupatti tank is under preparation." The Deputy Sanitary Engineer has been requested to expedite submission of these plans and estimates as required by the Chief Engineer.</p>	<p>Rs. 7,66,000</p> <p>39,600</p>
17	Cuddapah	Water-works improvements.		
18	Salem	Do.		

19	Adoni	..	Drainage	..	The Deputy Sanitary Engineer, North and Central, reports: "Plans and estimates are under preparation and will be submitted as early as possible. Plans of street drains are approaching completion and the working out of intercepting sewers is in progress."	2,50,000
20	Ellore	..	Do.	..	The Deputy Sanitary Engineer, North and Central, reports: "Plans and estimates are under preparation by the Assistant Sanitary Engineer, North, and will be forwarded as early as possible."	3,50,000
21	Berhampur	..	Do.	..	The Deputy Sanitary Engineer, North and Central, reports: "Preparation of plans and estimates will be taken up next year." (1915).	3,00,000
22	Chingleput	..	Do.	..	The Deputy Sanitary Engineer, North and Central, reports: "Preparation of plans and estimates will be taken up in January 1915. Meanwhile an estimate for further investigation has been sanctioned in G. O. Mis. No. 2186 M. dated 7th November 1914. This will be taken up shortly."	1,25,000
23	Guntur	..	Do.	..	The Deputy Sanitary Engineer, North and Central, reports: "Preparation of plans and estimates will be taken up next year." (1915.)	3,00,000
24	Bezavada	..	Do.	..	The Deputy Sanitary Engineer, North and Central, reports: "Preparation of plans and estimates will be taken up in January or February 1915."	4,00,000
25	Cocanada	..	Do.	..	The Deputy Sanitary Engineer, North and Central, reports: "Preparation of plans and estimates will be taken up next year." (1915).	2,50,000
26	Nandyal	..	Do.	..	The Deputy Sanitary Engineer, North and Central, reports: "Plans and estimates will be drawn up as soon as possible."	1,50,000
27	Anakapalle	..	Do.	..	This has been disposed of in G. O. No. 136 M., dated 22nd January 1913. The investigation of the scheme is pending the working out of schemes for the relief or congestion.	

Statement of report of progress of water-supply and drainage schemes under investigation
as on 1st January 1915—*contd.*

Serial number.	Name of town.	Nature of scheme.	Present stage of the scheme as on 1st January 1915.	Amount of estimate (approximate in those cases in which the scheme is not worked out in detail).
28	Nogapatam ..	Drainage ..	The Deputy Sanitary Engineer, South and West, reports : “The plans and estimates for a closed sewerage scheme ordered in G. O. No. 51 M., dated 8th January 1914, are under preparation and will be completed before 31st March 1915 if not earlier.”	Rs. 7,30,000 (closed sewerage scheme).
29	Kumbakonam ..	Drainage (including the opening of conservancy lanes).	The Deputy Sanitary Engineer, South and West, reports : “The scheme is under preparation by the Assistant Sanitary Engineer, South Circle. Antecedent to the construction of a drainage scheme in Kumbakonam, it is found necessary to open out many miles of conservancy lanes, the cost of which will amount to about two lakhs. The plans for this conservancy lanes are now being prepared in consultation with the Chairman of the municipality. Two draftsmen are employed on this work at Kumbakonam. The scheme is well advanced. As the drainage scheme will depend greatly on the scheme for opening up conservancy lanes, it will be designed after the latter scheme has been approved by Government. The Council has been requested to place Rs. 2,000 at the disposal of the Sanitary Engineer for special staff for designing the drainage scheme. Work will be commenced probably in April next.”	Rs. 6,00,000

30	Salern	..	Drainage	..	The Deputy Sanitary Engineer, South and West, reports : "The preparation of plans and estimates for this work is in progress . . . This scheme under preparation will consist of open drains with intercepting sewers and suitable sewage disposal and outfall works."	4,00,000.
31	Trichinopoly	..	Do.	..	The Deputy Sanitary Engineer, South and West, reports : "The preparation of hydraulic details relating to the drains of different sizes provided and other particulars called for in Public Works Department Memorandum No. 3865 D. R., dated 30th October 1913, is in progress."	10,50,000
<i>III.—Schemes under investigation.</i>						
32	Tiruvannamalai	..	Water-supply	..	The preliminary report submitted by the Deputy Sanitary Engineer, North and Central, after completing the investigation ordered in G. O. Mus. No. 1795 M., dated 18th September 1913, has been returned to him ordering the putting down of further boring and for joint inspection.	1,50,000
33	Rajahmundry	..	Do.	..	The Deputy Sanitary Engineer, North and Central, reports : "Investigation nearly completed and a preliminary report with an estimate for further investigation will be shortly submitted."	7,50,000
34	Parlakimedi	..	Water-supply and drainage	..	A preliminary report received from the Deputy Sanitary Engineer, North and Central, has been returned to continue further investigation. The Deputy Sanitary Engineer reports that the work will be taken up soon	2,00,000
35	Ongole	..	Water-supply	..	The Deputy Sanitary Engineer, North and Central, reports that the further investigation ordered in G. O. MIs. No. 403 M., dated 27th February 1914, is in progress.	2,00,000
36	Nandyal	..	Do.	..	A report on the investigation done and an estimate for further investigation have been received from the Deputy Sanitary Engineer, North and Central, this month, and are under scrutiny by the Sanitary Engineer.	2,50,000

Statement of report of progress of water-supply and drainage schemes under investigation
as on 1st January 1915—*contd.*

Serial number.	Name of town.	Nature of scheme.	Present stage of the scheme as on 1st January 1915.	Amount of estimate (approximate in those cases in which the scheme is not worked out in detail).
				Rs. 62,000
37	Palacole	..	Water-supply .. The Deputy Sanitary Engineer, North and Central, reports: "Investigation ordered in G. O. No. 2039 L., dated 22nd November 1913, is nearly completed by the Assistant Sanitary Engineer, Northern Circle." A fresh estimate for scheme D has been received this month from the Deputy Sanitary Engineer, Northern and Central Circles.	1,22,000
38	Peddapuram	..	Do. The Deputy Sanitary Engineer, North and Central, reports that the investigation ordered in G. O. No. 1340 L., dated 18th August 1913, is in progress under Assistant Sanitary Engineer, Northern Circle.	3,00,000
39	Srirangam	..	Do. This scheme is under investigation jointly with that required for Trichinopoly water-works improvements.	3,00,000
40	Cochin	..	Do. The Deputy Sanitary Engineer, South and West, reports: "The boring has reached a depth of 243 feet and work has been suspended temporarily with the view of securing a more experienced boring superintendent. Mr. J. A. Klen was re-engaged from the 20th November 1914 as reported in Sanitary Engineer's letter No. 802 G., dated 20th November 1914, to the Chief Engineer. After arranging for certain new tools and rods required for	

41	Mangalore	..	Water supply	..	lowering and sinking the 10" pipes, Mr. Klein reached Cochin on the 1st December. The 10" pipes are now being lowered and the boring has now reached a depth of 325 feet".*	6,50,000
					"The Deputy Sanitary Engineer, South and West, reports : "The complete investigation ordered by Government in G.O. No. 153 M., dated 24th January 1914, has been partially done and the work has been suspended owing to monsoon conditions. Experimental well in the Maroli valley has thus far not disclosed any possibilities of abundant sub-soil supply. The Deputy Sanitary Engineer proposes to sink the well to the rocky substratum where according to popular opinion there is a copious supply of good water. Operations are proposed to be resumed early next year." (1915).	
42	Calicut	..	Do,	..	The Deputy Sanitary Engineer, South and West, reports : "The further investigation of the Elathur water-supply scheme sanctioned in G. O. Mis. No. 2305 M., dated 19th November 1913, and for which funds were promised by the Council and the surveyor accordingly engaged thereon, had to be stopped owing to monsoon having set in. But the work done thus far has afforded proof of the existence of a copious and potable supply in the Elathur valley at the proposed head-works site. Further investigation will be resumed early next year. Plans and estimates which were stated in the last quarterly report as being drawn up have had to be deferred owing to urgent work on hand and this scheme may lie over till the completion of the investigation."	6,00,000
43	Mannargudi	..	Do.	..	Investigation work has been completed and the scheme will be designed in due course.	3,00,000

* Vide Mr. H. Nowroji's note on Artesian Boring in Cochin, at p. 105.

**Statement of report of progress of water-supply and drainage schemes under investigation
as on 1st January 1915—contd.**

Serial number.	Name of town.	Nature of scheme.	Present stage of the scheme as on 1st January 1915.	Amount of estimate (approximate in those cases in which the scheme is not worked out in detail.)
44	Trichinopoly	Water-works improvements	The Deputy Sanitary Engineer, South and West, reports : " The experimental well sanctioned in G. O. No. 853 M., dated 28th April 1913, has been sunk to 43 feet. The results have been sufficiently definite to prove the exist- ence of a large volume of sub-soil water below the stratum tapped by the existing infiltration works. Quantity and quality tests will be made next hot weather. The investigation ordered in G. O. Mts. No. 1608 M., dated 18th September 1913, having been completed, an estimate for the investigation and drawing up of plans and estimates for the drainage of the whole town has been received from the Deputy Sanitary Engineer, North and Central. Proposal for draining a portion of the town have been sanctioned for execution in G. O. No. 1915 M., dated 5th October 1914. The Deputy Sanitary Engineer, North and Central, reports : " Preparation of preliminary plans are nearly completed and a report is expected from the Assistant Sanitary Engineer, Northern Circle ". The Deputy Sanitary Engineer, South and West, reports : " Outdoor work having been completed, designing work will be taken up during 1915-16 as the work in hand is as much as can be done this year."	Rs. 4,00,000
45	Rajahmundry	Drainage		8,00,000
46	Tenali	Do.		1,30,000
47	Periyakulam	Do.		2,50,000

48	Calicut	..	Do.	..	The Deputy Sanitary Engineer, South and West, reports : "Plans and estimates will be drawn up in 1915-16."	2,00,000
49	Cochin	..	Do.	..	The Deputy Sanitary Engineer, South and West, reports : "Plans and estimates will be drawn up in 1915 to 16."	1,50,000
50	Chidambaram	..	Do.	..	The Deputy Sanitary Engineer, South and West, reports : "Levels have been taken. Investigation will be completed in 1915-16."	2,00,000
51	Mangalore	..	Do.	..	The work of opening up of conservancy lanes has first to be completed by the Council.	3,10,900 (closed).
52	Tanjore	..	Do.	..	The Deputy Sanitary Engineer, South and West, reports that the investigation for which funds have been placed by the Council has been started and is in progress.	1,85,000
<i>IV.—Schemes the investigation of which has not yet been taken up.</i>						
53	Coimbatore	..	Water-supply	..	The Deputy Sanitary Engineer, North and Central, reports : "Orders of Government for further investigation of scheme, formulated in a preliminary report, are awaited. An estimate for investigation called for is under preparation."	15,95,000
54	Walajapet, Arcot and Ranipet.	..	Do.	..	The Deputy Sanitary Engineer, North and Central, reports that the investigation will be taken up as soon as possible. With reference to the estimate sanctioned in G. O. No. 2166 M., dated 6th November 1914, the Deputy Sanitary Engineer, North and Central, reports that a surveyor for the investigation has been appointed.	2,00,000
55	Tirupattur	..	Do.	..	Orders are awaited on the preliminary report forwarded with this office No. 833 M., dated 28th March 1913, through the President, District Board, Anantapur.	..
56	Penukonda	..	Do.	..	With reference to the investigation sanctioned in G. O. No. 1149 L., dated 23rd June 1914, the Deputy Sanitary Engineer, South and West, reports, that it will be started early in January and completed during the ensuing hot weather.	55,000
57	Panruti	..	Do	..	The Deputy Sanitary Engineer, South and West, reports that the investigation will be commenced early in January 1915.	1,00,000
58	Palghat	..	Do.	..		4,55,000

**Statement of report of progress of water-supply and drainage schemes under investigation
as on 1st January 1915—*contd.***

Serial number.	Name of town.	Nature of scheme.	Present stage of the scheme as on 1st January 1915.	Amount of estimate (approximate in those cases in which the scheme is not worked out in detail.)
59	Thruvālūr (Tanjore district).	Water-supply	The Deputy Sanitary Engineer reports: 'The Council has placed the necessary funds for carrying out the investigation sanctioned in G. O. No. 1523 M, dated 10th August 1914, and it will be started in January.'	RS. 1,20,000
60	Gudalur, Cumbum, Uttamapalayam and Chinnammannūr (Madura district)	Do.	The Deputy Sanitary Engineer, South and West, reports: "The preliminary report has been received from the Assistant Sanitary Engineer. He roughly estimates the cost of supplying the four towns at Rupees 8,00,000. As such a costly scheme is out of the question, the Deputy Sanitary Engineer is considering ways and means of reducing the cost. The report will be submitted in due course."	..
31	Pollachi, Udumalpet, Trippūr, Gobichettipālayam and Mettāpālayam (Coimbatore district).	Do.	The Deputy Sanitary Engineer, South and West, reports: "All these unions have been inspected by the Assistant Sanitary Engineer, West, who has also submitted a report. No reliable sources of supply have been revealed. Much experimental work will be necessary and before recommending this, the Deputy Sanitary Engineer proposes to inspect the unions personally."	..
62	Srīvilliputtūr.	Do.	A preliminary report has been received from the Deputy Sanitary Engineer, South and West, and is under consideration.	..

63	Bellary	..	Drainage	..	The Deputy Sanitary Engineer, North and Central, reports that the investigation will be resumed in the current year. An estimate for Rs. 2,150 for certain further work has been sent to Government in Local and Municipal Department in this office No. 713 G., dated 21st October 1914.	4,00,000
64	Kurnool	..	Do.	..	The Deputy Sanitary Engineer, North and Central, reports: "Investigation has been started. An estimate for further investigation has been sanctioned in G.O. Mis. No. 2145 M., dated 4th November 1914."	2,00,000
65	Cuddapah	..	Do.	..	The Deputy Sanitary Engineer, North and Central, reports that the investigation will be started this year. An estimate for Rupees 2,100 for investigation has been sent up for sanction in this office No. 750 G., dated 2nd November 1914. Scheme postponed for the present— <i>vide</i> G. O. No. 2528M., dated 18th December 1914,	2,50,000
66	Vāṇiyambādi	..	Drainage (partial).	..	In regard to the investigation sanctioned in G. O. Mis. No. 2165 M., dated 6th November 1914, the Deputy Sanitary Engineer, North and Central, reports that the same will be started shortly.	1,85,000
67	Erode	..	Drainage	..	The Deputy Sanitary Engineer, South and West, reports that the investigation will be taken up in due course.	1,50,000
68	Mannārgudi	..	Do.	..	In regard to the investigation ordered in G. O. Mis. No. 1183 M., dated 17th June 1914, the Deputy Sanitary Engineer, South and West, reports that the same will be taken up in due course.	..

Town Planning Legislation in England.

IN spite of all the many circumstances that tend to distract attention from domestic problems at the present time,

Town-planning still retains its hold on the mind of Municipal administrators, and the assurance of the Government that funds would be placed at the disposal of local authorities to assist construction has done much towards pushing matters forward. But apart from the carrying out of Town-planning schemes in connection with the provision of housing accommodation for the working classes, there are many aspects of Town-planning work that can well receive attention. The application of Town-planning ideas to industrial centres was recently discussed at a meeting of the Royal Sanitary Institute over a paper by Mr. F. W. Platt, Building Surveyor under the Salford Corporation, in which the merits of laying out towns on well considered plans were discussed. It was Jeremy Bentham, if we mistake not, who, early in the nineteenth century, at the time when industrial activity was causing hamlets to grow into villages, and villages to develop into towns, wrote:—“A nation is only truly great and worthy of the land and scenes it has inherited, when by its acts and arts it renders them more desirable for its children.” Mr. Platt points to the condition of those of our English towns that were constructed during the early part of last century as showing how little the principles inculcated by that writer and by Howard, Brougham, Wilberforce and others, operate in the minds of those who were engaged in pushing forward our commercial and industrial development. Landowners and builders were left to do what they chose and the workers had no alternative but to live in the dwellings provided for them in slums and alleys and courts. Mr. Platt reminds us that prior to the reign of George the Second, the state had not deemed it necessary to control the development of land for building purposes. Industry was in its infancy and the land was owned by but few individuals, who exercised the

right that ownership carried with it the right to develop it as they desired, subject always to existing public rights of way. With the close of eighteenth century came a revival in industry and the population increased considerably, but the houses erected during that period by both speculators and landowners were closely packed together. There was no public control over these buildings, and the conditions of housing suffered accordingly, for the buildings were deficient in air space, inadequately ventilated, and of flimsy construction. To remove these evils, Local Improvement Acts were passed. Generally, these enabled the width of streets to be regulated, gave power to acquire land for street purposes and to deal with ruinous buildings and kindred matters whenever such came within their sphere of operation. Until the year 1848, there was no general statute dealing with public health matters, and the control of building operations was limited to those towns in which Improvement Acts were in force; but the Public Health Act of 1848 gave to Municipal Corporations the power of making bye-laws as to streets and buildings, and these powers were extended in 1858 to the Local Boards of Health which the epoch-marking statute, known as the Local Government Act, 1858, brought into existence. Still the bye-law making power was confined to the authorities of towns and it was not until 1872 that rural districts were put under the jurisdiction of rural sanitary authorities. Since that time it has been possible for all urban and rural authorities throughout the land to control the construction of streets and buildings in many ways, but their powers have fallen short of the right to regulate many matters of the highest importance, and they have been unable to prevent crowding of buildings on areas. It was in these circumstances that, as Mr. Platt points out, the influence of town-planning upon the continent was being felt in England, and the members of the community felt that a change in the system was needed if our future towns were to be healthy. Pioneers were at work on what is known as the "garden suburb and city" movement, and statistics were produced to

show that a scheme of land development upon what is now known as town-planning lines, whilst being beneficial to the public and to the tenants, could be most lucrative to the landlords. The Housing and Town-planning Act, 1909, was the outcome of all these movements and is to some degree the expression of the ideals which prompted them. The efficient application of the extensive powers which this Act gives is the keynote of modern enterprise in Municipal work.

Town Planning in Great Britain.

The great interest taken in the town planning movement in Great Britain is shown by the rapid progress made by local authorities in the preparation of Town planning schemes. The following table shows approximately the progress made up to July, 1914. It must be remembered that the English T. P. & H. Act, 1909, empowering local authorities to prepare schemes is still only permissive.

	No. of Authorities Schemes. concerned		Acreage affected.
Schemes finally approved ...	2	1	3,762
Laid before Parliament ...	1	1	5,906
Prepared and submitted for approval ...	3	3	661
Authorised to be prepared or adopted ...	71	51	1,05,783
Applications for authority to prepare schemes under consideration ...	22	21	43,484
	99	72(net)	159,596

143 further schemes are contemplated and the net number of local authorities in town planning ventures in various stages of proposal or in contemplation is 201.

Town Planning Means.

The following is a Reproduction of a striking handbill issued by the Massachusetts Homestead Commission.

- | | |
|--|--|
| <p>1. CONSERVATION OF HUMAN ENERGY and PRESERVATION of LIFE, particularly child-life.</p> <p>2. ECONOMY, necessity, scientific reality.</p> <p>3. CONFORMITY to DEFINITE PLAN of orderly development into which each improvement will fit as it is needed.</p> <p>4. Saving in cost of public improvements by BUSINESS METHODS for city business.</p> <p>5. CORRELATION of the city's activities.</p> <p>6. ENCOURAGEMENT of COMMERCE and facilitation of business.</p> <p>7. PRESERVATION of HISTORIC BUILDINGS WITH their traditions.</p> <p>8. The development of an AMERICAN City worthy of civic pride.</p> <p>9. The rule of COMMON FORESIGHT and prudence.</p> <p>10. HAPPINESS, CONVENIENCE, HEALTH, for ALL citizens.</p> | <p>1. Not MERELY superficial beautification.</p> <p>2. Not extravagance, dreams, fads.</p> <p>3. Not the immediate execution of the whole plan.</p> <p>4. Not the surrender of the city to artists with vague schemes for civic adornment.</p> <p>5. Not wholesale alterations at great expense, with no assured financial returns.</p> <p>6. Not the interruption of commerce and business.</p> <p>7. Not the destruction of the old landmarks and city individuality</p> <p>8. Not imitation of London, Vienna and Paris.</p> <p>9. Not the rule of chance with ruinous expense and debt.</p> <p>10. Not merely expensive boulevards and parks available only to the rich.</p> |
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Town Planning Commandments.

The Brooklyn Tenement House Committee has published as commandments, ten points bearing on the duty of householders to their neighbours, their neighbourhood, themselves, and their families:—

1. Thou shalt honour thy neighbourhood and keep it clean.
2. Remember thy cleaning day and keep it wholly.
3. Thou shalt take care of thy rubbish heap, else thy neighbour will bear witness against thee.
4. Thou shalt keep in order thy alley, thy back yard, thy hall and thy stairway.
5. Though shalt not kill thy neighbour by ignoring fire menaces or by poisoning the air with rubbish and garbage.
6. Thou shalt not let the wicked fly breed.
7. Thou shalt not keep thy windows closed day and night.
8. Thou shalt covet all the air and sunlight thou canst obtain.
9. Because of the love thou bearest thy children, thou shalt provide clean homes for them.
10. Thou shalt not steal thy children's right to health and happiness.

Notes of Cases.

(Important Cases will be fully reported hereafter.)

KING'S BENCH DIVISION.

RIDLEY, AVORY, AND LUSH, JJ.

Mc Nair vs. Terroni.

Food and Drugs.—Refusing to supply sample—Milk exposed in pan on counter—Exposure for sale.

A shopkeeper had milk which he did not sell separately but was added to tea, coffee or cocoa sold by him. A Sanitary Inspector applied for sale to him of a sample of milk; the shopkeeper refused to sell, on the ground that the milk was not exposed for sale. The Court of appeal held that the milk was exposed for sale and that the shopkeeper was bound to sell a sample out of the same.

HIGH COURT, MADRAS.

KUMARASWAMI SASTRI, J.

Purushotham Sah

vs.

The Corporation of Madras.

Madras City Municipal Act III of 1904, Section 249.—Powers of the President to grant permission to erect balconies over streets.

The President's permission must be obtained prior to construction of balconies over streets. He has a discretion in the matter of giving or refusing permission; and against his orders, there is no appeal to the Standing Committee.

HIS HONOR C. KRISHNASWAMI ROW, ADDITIONAL CITY

CIVIL JUDGE.

Kolandai Auchari

vs.

The Corporation of Madras.

Madras City Municipal Act III of 1904, Sections 247 and 252.—Powers of the Corporation over private streets.

A fence or other obstruction cannot be erected or put up in or across a private street; and the Corporation has powers to remove the same.

Government Orders and Announcements.

[PUNJAB]

THE following draft rules which the Lieutenant-Governor proposes to make under the provisions of section 240 (1) (a) and (i) of the Punjab Municipal Act III of 1911, for regulating the powers and duties of certain Municipal Committees in respect of the employment of Health Officers and prescribing the qualification to be required of such officers, are published for general information.

(1) One Health Officer of the 1st class shall be employed in each of the Municipalities of Lahore and Amritsar, and one Health Officer of the 2nd class shall be employed in each of the Municipalities of Multan, Rawalpindi, Sialkot, Ludhiana and Jullundur.

(2) No Municipality shall appoint to or retain in the post of Health Officer any person who does not possess a registrable medical qualification, that is, one which is accepted by the General Council of Medical Education and Registration of the United Kingdom, and a recognised Diploma of Public Health of a British or Indian University.

(3) The pay of Health Officer shall not be less than the following scale:—

1st class Health Officer	...	Rs. 450-20-750.
2nd class Health Officer	...	Rs. 150-10-300.

But these rates may be exceeded with the sanction of Government.

(4) The appointment and dismissal of Health Officers shall be under the control of the Municipal Committee subject to the approval of the Local Government as regards 1st class Health Officers and of the Commissioner as regards 2nd class Health Officers. In all cases, the Municipal Committee shall take into consideration the recommendation of the Sanitary Commissioner.

[BEHAR AND ORISSA.]

In accordance with the provisions of Sections 3, 4 and 6 of the Jharia Water Supply Act, 1914 (Behar and Orissa Act III of 1914), the Lieutenant Governor in Council has been pleased to direct that a Board to be called the Jharia Water Board shall be established with effect from the first day of February, 1915. The Deputy Commissioner of Manbhum has been appointed Chairman of the Board. [G.O. Nos-1326-7 M., dated 28-1-15].

Legislative Intelligence.

[MADRAS.]

NON-OFFICIAL PRESIDENTSHIPS OF TALUK BOARDS.—The Hon'ble Mr. B. V. Narsimha Aiyar asked if the Government proposed increasing the number of Non-official Taluk Board Presidentships and whether the Government would consider the desirability of allowing the Presidentships to be filled up by election in some places at least.

Government replied that the question of increasing the number of non-official Presidents was under the consideration of Government but that they were not disposed to increase the number of elected Presidents of Taluk Boards.

DELEGATION OF POWERS OF PRESIDENTS OF LOCAL BOARDS.—The Hon'ble Mr. A. S. Krishna Rao asked whether Government had issued any, and if so, what instructions regarding the delegation of powers by Presidents of District Boards to their respective Vice-Presidents.

Government referred the Hon'ble member to G.O. No. 159 L. dated the 31st January 1912 which was intended to apply to the District Boards as well as to the Taluk Boards.

PROCEEDINGS OF DISTRICT BOARDS.—The Hon'ble Shifa-ul-Mulk T. Zain-ul-abidin Sahib asked whether it was a fact that in Kurnool and in some other Districts the proceedings of the District Boards were conducted entirely in

English without translating the proceedings into the Vernacular of the District for the benefit of those members who were unacquainted with the English language, and if the Government would issue instructions to all the Presidents of District Boards to have the proceedings translated into the vernacular of the District.

Government replied that they had no information on the point and that it was open to any District Board to make a rule that its proceedings should be translated into the vernacular; since in many boards all the members understood English, Government did not consider it necessary to issue instructions insisting upon such translation everywhere.

MUNICIPALITIES, AND HEALTH OFFICERS.—The Hon'ble Rao Bahadur A. Subbarayalu Reddiyar asked the Government to lay on the table a list of the Municipalities that had appointed or agreed to appoint Health Officers to supervise the work of the Sanitary staff.

Government answered that Health officers were employed in Madura, Ootacamund and Tuticorin and that the Municipal Councils of Cocanada, Coonoor, Ellore, Mangalore, Negapatam and Trichinopoly had agreed to appoint them.

Some Recent Publications.

AN INTRODUCTION TO TOWN PLANNING; By Julian Julian, Borough Engineer, Cambridge. With diagrams and plans. A valuable addition to the Town Planner's Library. Price 5s. net.

PUBLIC HEALTH LAW; By S. G. Turner, Barrister-at-law, A. M. I. C. E. Price 10s. 6d.

PRACTICAL TROPICAL SANITATION; A Manual for Sanitary Inspectors and others interested in the prevention of disease in tropical and sub-tropical countries. By W. Alex. Muirhead, with numerous illustrations. Price 10s. 6d. net.

THE REDUCTION OF DOMESTIC FLIES; By Edward H. Ross, with Illustrations. Price 5s. net.

THE ANOPHELINE MOSQUITO; By R. C. Danglish. Price 6d. net.

A GLOSSARY OF ROAD TERMS; By H. Percy Boulnois, M. Inst. C. E. Price 2s. net.

THE LOCAL GOVERNMENT DIRECTORY FOR 1915. Price 8s. 6d. net.

WOODWORKING MACHINERY: Its Use, Progress and Construction. By M. Powis Bale, M. Inst. C. E., M. I. Mech. E. Price 9s.

ASPHALT AND ITS USES; Messrs. Salter, Edwards & Co., Ltd. A book of considerable interest to architects, engineers and builders. Engineers and architects can obtain a copy of the book free on application to the firm mentioned.

GRAPHIC METHODS FOR PRESENTING FACTS; By William C. Briton. Price 16s. 8d.

The book describes in detail the various methods used by engineers, social workers, business men and statisticians to illustrate facts by means of diagrams; a useful work for those engaged in any kind of statistical work.

RAPID EARTHWORK CALCULATION; By C. E. Housden, Late Superintending Engineer, P. W. D., India. Price 1s. 6d.

Report of the Special Committee on Reinforced Concrete, (The Engineering Society of China.) Shanghai. Messrs. Kelly and Walsh, Ltd.

Liverpool Town Planning and Housing Exhibition and Conference (1914); Transactions of the Conference. Price 7s. 6d.

Practical Points.

[The questions of subscribers only are answerable in the Gazette. The name and address of the subscriber must accompany each communication which must be legibly written.]

4. *Roadside waste—Right to grass.*

“Who is the owner of grass on the road side? And who is entitled to cut and remove the same?”

Answer.

By the mere vesting of streets in local authorities, they do not become the owners of the soil. Trees and herbage belong to the owner of the soil; and he is entitled to cut and remove the same. (*Turner v. Ringwood Municipal Board*, L. R., 9 Eq. 418).

5. *Buildings unfit for human habitation—Right of owner to inspect the reports of medical officers of the local authority—Powers of local authority.*

The owner of a house is called upon to close it on the ground that it is unfit for human habitation. The local authority acts on the report of its medical officer. The owner challenges the *bona fides* of the medical officer and insists on his inspecting his report. The local authority acts not only on the report of the medical officer but takes also other circumstances into consideration. Can the order of the local authority be set aside?

Answer.

The owner is not entitled to inspect the report of the medical officer. (*Ex parte Arlidge*, (1914) W. N. 328, H. L.) The local authority has power to take into consideration all the causes rendering the house unfit for human habitation. (*Hall v. Manchester Corporation*, 78 J. P. 315).

6. *Employment of an independent contractor—Liability of the Corporation for his negligence.*

A Municipality employs a contractor to repair its roads. The contractor agrees to do the works carefully and to be himself responsible for any damage that may be caused if the works are done negligently. While repairing a road, he stocks gravel in the road and does not take proper precautions re lighting, &c; and A's horse while passing along the road

stumbles against it and is injured. A sues the Municipality for damages and the Municipality pleads that the contractor is the only person liable. Has A any cause of action against the Municipality?

Answer.

The employment of an independent contractor does not relieve the Municipality of its duty to provide for safety to persons lawfully using the street. A has a cause of action against the Municipality. (*Corporation of Calcutta v. Anderson*, I.L.R., 10 Cal., 445; *Dhondiba v. Municipal Commissioner of Bombay*, I.L.R., 17 Bom., 307).

The Local Self-Government Gazette.

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Ourselves.

IN the opening number of the *Gazette* we referred to the great interest evinced in municipal matters by an ever growing body of public men in our country. We have received gratifying proof of this in the interest shown by various municipal bodies in the *Gazette*. We are receiving assurances of co-operation in our work from various centres and, with such support, we hope to be able to promote the object which the *Gazette* has placed before itself—to encourage the cause of civic administration and render a comprehensive and systematic study of local and municipal problems possible. The lack of comparative knowledge and experience is one of the chief defects in our civic administration. One local authority knows little of the administration of public affairs by another, though the problems arising for their solution present common features. The invaluable lessons of municipal experience are lost. There is thus waste of energy, each local authority working out important problems affecting large populations in its own fashion without benefiting by the results of the labours of workers elsewhere; and the free circulation of ideas which has always resulted in fruitful schemes of social improvement becomes impossible. The *Local Self-Government Gazette* hopes to be able to make the results of the experience of individual local authorities readily accessible to those engaged in administering public affairs; and to this end we earnestly invite the co-operation of all Municipalities and Local Boards. In this connection, we beg

to express our thanks to the Madras Government for having shown their sympathy in our efforts in a practical manner by sanctioning the supply to us, free of charge, of copies of (1) papers issued in the Local and Municipal Department and placed on the Editors' table; and (2) Parts I—A and IV (Local and Municipal and Legislative parts) of the *Fort St. George Gazette*, and by requesting Collectors to include us in the list of persons to whom the supplements to the District Gazettes concerning matters bearing on Local Boards and Municipal Councils are distributed free of cost.

The late Mr. Gokhale and Local Self-Government.

[BY THE HON'BLE MR. V. S. SRINIVASA SASTRIAR.]

IT would be strange if a man of such varied public interests as the late Mr. Gokhale had not done and said much that might profitably engage the attention of those that care in any degree for local self-government in India. This article is the result of an attempt to put together his views on that important subject and to indicate the ways in which they may be said to have influenced the progress of our self-governing institutions.

He was President of the Poona Municipal Corporation for about three years, and therefore brought to the study of the subject of self-government the accuracy and liveliness of interest that come from actual first hand knowledge.

In 1901 the Bombay Mofussil Municipalities Act came under revision, and Mr. Gokhale, who was then on the local legislative council, made an important speech at the second reading of the Bill which was introduced by Sir Charles Ollivant. Three points deserve to be selected from it, as they are of interest to us. The first refers to the concentration of

the executive power in the hands of a paid officer while the municipal councils lay down the policy and main lines of administration, and exercise general control over the acts of the executive. This plan, which the City of Bombay exhibits in a highly efficient form and which Sir Pherozeshah Mehta would have extended to the larger mofussil municipalities, was held by Mr. Gokhale to be suited only to the Presidency Corporations. He preferred the ordinary English model for other towns and liked the representatives of the people to take a hand in actual executive work by means of sub-committees. The Poona Municipality is well advanced in this experiment, and as soon as the general election is over, the various committees are elected, educational, financial, etc., each with a Chairman of its own, and great interest is taken in this second stage of election. The second point is the relation of District officers to municipal bodies. Mr. Gokhale would have these officers always remember that, according to John Stuart Mill, the object of municipal institutions is not merely efficient management of local affairs but the fostering of the civic spirit and the raising of the general intelligence of the people. They must therefore be sympathetic guides rather than dictators or hostile critics, giving "whatever guidance might be needed with great tact and in a spirit of sympathy, encouraging those who need encouragement and steadying the footsteps of the weak." The third point arose on a proposal that some of the elective seats should be filled by election by particular sections of the people. To this Mr. Gokhale strongly objected, as it would tend to defeat the most important object of self-government, *viz.*, the habituation of different classes to unite together for common purposes. Differences of religion do not necessarily imply differences of interest in civic affairs, and "the Legislature should not, in the best interests of the country, without the very strongest reasons, give any statutory recognition to these differences." This opinion of the departed patriot is of importance now, as the Government of India are understood to be considering the question of giving special

representation to Muhammadans in local boards and municipalities.

Mr. Gokhale's vigorous onslaught on the financial policy which resulted in successive surpluses is well known. If by over taxation more money was raised from the people than was absolutely necessary, he asked that the surplus money should be devoted to objects of general utility among which education and sanitation claimed high rank. These interests being confided to local bodies, the Government must make over a great part of the surplus of every year to them. The Congress of 1904, held in Bombay under the Presidency of Sir Henry Cotton, remarkable for many reasons, was most remarkable for a resolution on surpluses moved by Mr. Gokhale, the last clause of which ran: "That till such reduction is effected, the Congress urges that part of the surpluses be devoted to purposes which would directly benefit the people, such as the promotion of scientific, agricultural, and industrial education, and increased facilities of medical relief, and that the rest be employed in assisting local and municipal boards, whose resources have been seriously crippled by famine and by the annual recurrence of plague, to undertake urgently-needed measures of sanitary reform and the improvement of means of communication in the interior." Perhaps no resolution of the Indian National Congress could be said to have had such immediate effect as this one, for, in the Budget of 1905-06 the Government of Lord Curzon made a recurring grant in aid of the funds of District and Local Boards throughout India to the extent of half a crore and more and thus adding to the resources of these bodies about 25 per cent. of their income. Mr. Gokhale naturally claimed that this was a response to the appeal made by the national assembly and that the Government had conceded to local bodies the right to participate in the general prosperity of the Government of India. For the moment Municipalities were not to share in this grant, and Mr. Gokhale strongly urged their claim to financial assistance on the ground that their resources had been entirely crippled

by plague expenditure. He therefore made a powerful appeal in his Budget speech of that year on behalf of the residents of urban areas for Government aid towards works of permanent improvement, such as drainage and water-supply.

In his Budget speeches of 1906 and of 1907, Mr. Gokhale suggested that like the accounts of municipalities those of local boards should also be separated from the accounts of the Government of India. One way in which the mixing up of these accounts led to confusion was with regard to the expenditure on education. For example, Government spent £1,200,000 on education in 1906, and local bodies spent £800,000 out of their own income under the same head. And yet when Mr. O'Grady wanted in the House of Commons to know the amount spent by the State on education, the Secretary of State mentioned the figure of £2,000,000, being unable to separate the contribution of Local Boards. This reform necessary for the accurate presentment of accounts was effected in the year 1908.

Mr. Gokhale gave very important evidence before the Decentralisation Commission in the year 1908, a great part of which was concerned with improving the machinery and extending the scope of local self-government. It may be remembered that the official evidence before this Commission concerned itself mostly with proposals for devolution along official lines and did not countenance an increase in the powers or responsibilities of Local Bodies. Mr. Gokhale prepared a skeleton of a complete scheme all along the line from village panchayats through taluka boards and municipalities to district boards and having at the top district councils to share the responsibilities of Collectors and liberalise district administration. His proposals with regard to village panchayats are nearly those recommended by the Hobhouse Commission. He suggested the appointment of a special officer to watch over village panchayats as in the case of co-operative societies. It may be useful to give under his own headings the functions which these panchayats were to exercise :

(a) The disposal of simple money claims not exceeding rupees fifty in value.

(b) Trial of trivial offences, such as petty thefts where the value of property stolen does not exceed rupees ten, simple assault, simple hurt, abuse, nuisance, etc.

(c) Execution and supervision of village works.

(d) Management of village forests.

(e) Distribution of sanctioned allotments of Tagai in the village.

(f) Carrying out measures of famine and plague relief.

(g) Control of village water-supply and sanitation.

(h) Supervision of school attendance.

(i) Management of cattle-pounds.

As to the relative position of District and Taluka Boards, Mr. Gokhale did not seem altogether to approve of the present state of things in which the District Board is the unit of local administration, the Taluka Boards deriving authority therefrom and taking such funds as may be allotted to them. He would revert to the plan recommended by Lord Ripon in his famous Resolution of 1882. An essential condition of success was that every member of a local board should be familiar, or could easily become familiar, with the whole of the local area forming its jurisdiction—a condition that was impossible in the case of District Boards. The resources should, in Mr. Gokhale's opinion, be practically in the hands of the Taluka Boards which should consist altogether of elected members. District Boards should be merely co-ordinating bodies, depending for their finance on a share of the excise revenue or a special contribution from the Provincial Exchequer. Municipalities too should be purely elective bodies and freed from the minute control of the Government Secretariat. Government should only advise and give warning and retain a drastic power of suspension or dissolution in case the advice and warning were long unheeded.

As to powers, Mr. Gokhale was generally inclined to think that the present Acts needed no substantial change. It is interesting also to observe that Mr. Gokhale thought it an advantage in the case of District Boards to have Collectors as Presidents, unless 'non-official gentlemen of position, prepared to undertake regular touring throughout the Districts, are available for the office.'

In March 1912, Mr. Gokhale moved an important Resolution in the Imperial Legislative Council on the resources of Local Bodies. His proposal took the form of a recommendation that a mixed Committee should inquire into the adequacy of the resources of local bodies and suggest how they might be improved. Sir James Meston and Sir Guy Fleetwood Wilson, who were the spokesmen of Government on the occasion, acknowledged the inadequacy of the finances of local bodies, pointed out that the subject was already engaging the attention of the Government, and asserted that a Committee would do no good. It was in this debate that Sir Guy Fleetwood Wilson made the now famous comparison of Mr. Gokhale to the Indian juggler with his mango-tree trick. The whole debate is of surpassing interest to the student of local self-government, but there is no space here for more than a brief summary of Mr. Gokhale's views.

Comparing the total amounts taken by way of taxation, both central and local, from the people, in England, France and India, Mr. Gokhale comes through various calculations to the conclusion, which must be said to be somewhat remarkable, that the level of taxation is nearly the same, being about 12 per cent. of the whole national income. But a great difference emerges when the distribution of this taxation is considered between the central government and the local authorities. In England the total taxation is divided nearly half and half between the central and local governments. In France the State takes three-fifths and the local authorities get two-fifths of the total revenue. In India four-fifths is taken by the State and only one-fifth goes to the Local Bodies. And

even of this one-fifth, the State directly administers nearly two-thirds. A further point of difference is disclosed when we compare the proportions in which in the three countries chosen for comparison the revenue raised from land is distributed between the central and local governments. Mr. Bastable, whose authority is great on matters of finance, points out that local taxation must be largely drawn from land, and therefore it is very important that the central government should not trench upon this source of income beyond a certain limit. In England the land tax that is realised by the State is a comparatively small amount, nearly the whole of the contribution from land going to the coffers of local authorities. In France for every hundred centimes that land pays to the State, it pays one hundred and thirty centimes to the Communes and the Departments together. In India, where the bulk of local finance is the one anna cess on land, the State takes sixteen-seventeenths and leaves to local bodies only one-seventeenth of the total taxation raised from the land. Omitting land there are few other resources at the disposal of local bodies and these appear to be nearly used up. One suggestion that Mr. Gokhale threw out in this debate might interest the reader. He would revive octroi in Bengal and Madras. He said that in this country the theoretical objections to octroi did not hold good, and local bodies should not be deprived of a customary and well understood source of revenue. Of course, when Mr. Gokhale spoke of the revenue from land he provoked the rejoinder that it was a rent and not a tax and that it could not be included among the contributions of the people. Mr. Gokhale was prepared with an answer. He had the high authority of Sir David Barbour whose opinion was embodied in a report which was kept confidential, but of which Mr. Gokhale chanced upon a copy in the Imperial Library 'among a heap of books in a neglected corner.' Sir David Barbour's opinion was summarised by Mr. Gokhale in these words : "The only question that has to be considered is, of the total wealth produced by the community, how much is required

by the Government for the purposes of administration? It is quite clear that if the Government did not take the land-revenue from the people, it would remain with the community and would fructify in its pockets. In that respect land revenue stands precisely on the same level as the proceeds of the salt-tax or any other taxes, and therefore in estimating the total contribution of the people for the expenses of the Government, land-revenue, he says, must be included."

The Bombay Town Planning Act.

[BY THE HON'BLE MR. E. G. TURNER, I.C.S.]

THE Bill to provide for the making and execution of Town Planning Schemes in the Bombay Presidency was first introduced in the Bombay Legislative Council in December 1913 by the Hon'ble Mr. Hill with an admirable speech explaining the principles upon which the Bill had been drawn up. The Bill was the first of its kind in India and owing to its novel and experimental nature, the debate upon it was postponed in order to give members some time to consider properly its originality and complexity. The first reading was taken up again in March 1914 and after a practically unanimous debate on the importance of the principles of the Bill it passed its first reading and was referred to a Select Committee for consideration. The Select Committee was a large one composed of 16 members, but they completed their work within a month and their report contained only one minute of dissent. The Bill as amended by the Committee was then published and the public and local bodies had more than six months to digest and criticise its provisions. In December, 1914, the Bill as amended was again before the Council, and with a few alterations was passed and it has just received the sanction of the Governor-General. The Act in the first instance is to apply *proprio vigore* to the Island of Salsette, which is the island adjacent to the Island of Bombay and where a suburban

extension of Bombay is developing. It can be applied to other parts of the Presidency by a Government notification, but its extension to the City of Bombay is subject to a previous application being made for that purpose by a majority of the whole of the Municipal Corporation. This special treatment for Bombay City was made, in deference to the wishes of the Corporation members. Their wishes appear to be reasonable as the Corporation has been spending large sums on various City improvements, and there is already an Improvement Trust body working under a special Act, which is doing much useful work in laying out garden suburbs within the Island of Bombay. The mere extension of the Act, however, to other parts of the Presidency does not connote that town planning schemes under it will be forced upon local areas, as soon as a notification extending the Act appears. Even in Salsette Island, where the Act is to apply immediately, it will be for the local authorities concerned to move first in the matter and to apply for sanction to make a scheme and it is only when Government considers that a local authority neglects or fails to make a scheme that it has power to compel a scheme to be made. The English Act has a similar provision which is by no means a dead letter in England. The power however is unlikely to be used except in cases of undoubted necessity, and the mere fact of the existence of such a power will act as an incentive to keep local authorities up to their duty in respect of the future developments of their towns. The local authorities to which the Act has reference are Municipalities and Notified Area Committees. The Committees are in reality Municipalities, but exercise only certain specific powers under the District Municipal Act. The Act therefore applies primarily to Municipal areas. The areas under District Local Boards are not specifically included, but any area under a Local Board in which it is proposed to make a town planning scheme could be declared a notified area for the purposes of the Act and the members of the notified area as thus constituted could be chosen from the

members of the Local Board concerned. The Act is one of some complexity, and the difficulties of drafting were great; but as was pointed out in Council by an Honourable Member, the success of an Act of this nature will depend more upon the way it is actually worked than upon the legal refinements of drafting. The success of working the Act will depend upon the amount of co-operation given by all parties concerned. The Act, so to speak, should be more in the nature of a force in the rear ground to overcome obstructionists who refuse to accept a reasonable compromise. Agreement should be the key note of its operations, and this is fully brought out in the Act which gives power to a local authority, subject to certain control, to make any agreement with any person in respect of any matter to be provided in a town planning scheme. Important powers conferred by the Act are those of re-arranging plots and of charging owners for 'betterment' when their lands are enhanced in value by a scheme. In Salsette, which is a rice growing district, the plots of land are mostly small and of irregular shape. It is most important therefore to have power to re-arrange their boundaries, and if necessary to amalgamate them in order to render them suitable for building purposes. Any increase in the value of a plot due to the alteration of its shape is charged to the owner, and any decrease due to such cause, as for example when his plot is made smaller, is credited to him. As regards betterment, its amount is limited to one-half the increase in value, due to the scheme, of an owner's final plot, that is to say, the plot which remains with him after alterations of boundaries have been made, and after any lands taken from it for roads have been deducted. It does not follow that this maximum limit of betterment will be taken in every scheme, as the owner is only called upon to bear his proportionate amount of the local authorities' expenses, subject to this maximum limit of one-half the actual increase in the value of his property. The same proportion of betterment will be taken from all owners and if the total cost of the scheme to be distributed amongst owners

is less than one-half the total betterment, then the owners will not be called upon to pay their maximum of one-half, but a less proportion. If, on the other hand, the costs exceed the sum total of betterments, then the owners can only be called upon to pay their one-half share of betterment and the excess will have to be met by the local authority concerned. Each owner will have a ledger account with the local authority. On one side he will be debited with his share of betterment, and on the other side he will be credited with any land surrendered by him for roads, etc. There are other items which can be entered in the ledger, which can be seen from the Act. It is not necessary to specify them in detail here, but when once an owner's account has been completed, the balance is struck. If the balance is in favour of the local authority, the owner pays them either in a lump sum or by instalments with interest. If the balance is in favour of the owner, then the local authority must pay him in ready cash unless they come to some other amicable arrangement amongst themselves. All this may appear complicated, but as a matter of fact it is not difficult to follow in any specific case. It is hoped that, as in England, there will be many agreements made between the local authority and owners on this subject of betterment. If for instance a small town planning scheme merely consisted in the making of one road, then it might be possible for the local authority and the owners to agree that the costs should be met according to the length of frontage of each plot and the need to estimate the 'betterments' would not then arise. In any case it would only arise in respect of those plots whose owners refused to come to terms.

The Act is divided into five chapters. The first chapter deals with definitions and explains for what a town planning scheme may provide. Amongst other things it may provide for the construction and diversion of roads, the plotting out of land as building sites, the reservation of land for public purposes and the preservation of objects of historical interest or religious veneration. The second chapter deals with the

procedure to be observed by a local authority which wishes to make a scheme. The third chapter deals with finance and shows how the costs and owners' contributions are to be calculated. The fourth chapter deals with the functions of the Arbitrator and the Tribunal of Arbitration. The Arbitrator does the preliminary work of valuation, and his more important valuations are subject to the confirmation of a Tribunal of Arbitration consisting of the District Judge, the arbitrator and one assessor. The last chapter is headed 'miscellaneous' and deals also with joint schemes prepared by two or more local authorities and empowers the Governor in Council to make rules. A large number of points are enumerated on which rules are to be made, and the power to make rules is subject to the condition of previous publication. The formulation of these rules will be an important duty and will require careful consideration. There are a number of points in the Act upon which one could enlarge, but it would not be within the compass of this note to deal with them in detail. The Act may not be perfect, and experience of its working may suggest amendments. A great deal of labour, however, has been expended in drawing up its provisions from a practical point of view and it is at least hoped that it will be of some practical use; that our local authorities will be able to provide for the future orderly extensions of their towns; and that those persons who directly benefit by improvement schemes will be made to contribute towards their costs by surrendering a share of the benefits which they derive, and thus relieve the general tax-payer who lives in the old quarter of a town and derives no actual direct pecuniary benefit by the schemes undertaken for its extension.

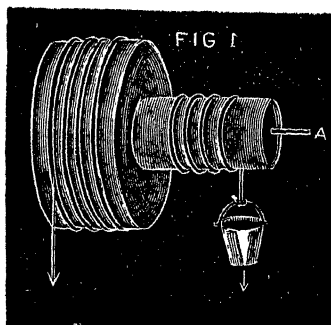


Improvements to Wells.

PROFESSOR GEDDES in one of his earlier lectures on Town Planning observed that among the defects of the many wells he had seen during his tour in South India, one was that none of them had appliances for minimizing the effort required for lifting water. The pots or buckets were let down by hand by the aid of a rope, and lifted up when full by the same means. This, we agree with the Professor, is a great inconvenience and hardship on the "drawers of water" who are mostly women—often with children in arms—demanding an effort disproportionate to the work done, and thereby reducing their capacity for further work.

There are many cheap appliances which may be installed on the wells, and which will considerably ease the task of lifting water from wells and tanks. We mention below a few of the most useful and easily obtainable.

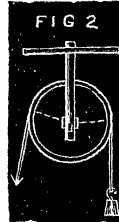
Fig. 1 shows the *Wheel and Axle* appliance. It consists of two cylindrical rollers joined together with a common rod A, the latter preferably of iron. This rod rests on two rails or upright supports (fixed at the well) acting as pivots



about which the wheel and axle can turn freely. The larger roller is called the wheel and the smaller the axle. Both

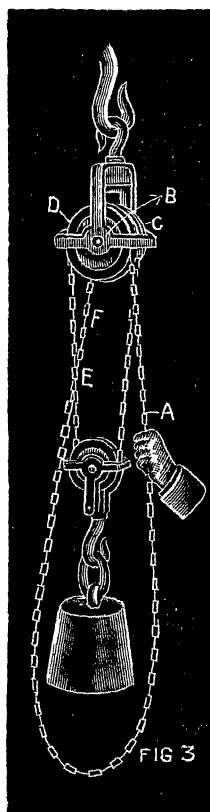
have ropes wound round them but in opposite directions. The rope round the axle supports the bucket or pot, and the effort is applied by pulling the rope coiled round the wheel. As the rope round the wheel is unwound, that round the axle winds up and raises the weight. The effort required is equal to the weight lifted multiplied by the radius of the axle and divided by the radius of the wheel. By making the wheel large and the axle small the mechanical advantage could be made as great as is desired. The machine is simple and can be made by an ordinary carpenter at a small cost, as the wheel and axle may be of wood. It is also easily fixed up.

Another contrivance is to fix an ordinary pulley on to a horizontal rail or piece of timber fixed above the well. (See Fig. 2). Here the bucket or pot is attached to one end of the rope passing round the groove and the pull is applied at the other end.



In this case, the pull or the force exerted is equal to the weight lifted. That is, the same force is applied as if the bucket or pot of water was lifted without the pulley. The only difference is that instead of the woman being compelled to apply her effort in one upward direction only, with a fixed pulley, she can apply force in a different direction. The usefulness of the fixed pulley lies in its convenience. It is far easier to lift a bucket of water by pulling down a rope passing over a pulley than to hoist the bucket up with a rope only.

Fig. 3 shows a *Differential Pulley Block* which will be found very useful. A light type installed over a well will



quite suit. When chain or rope A is pulled, it turns the pulley B which has two grooves C and D; C is slightly smaller than D, and so the chain is lifted at E and lowered at F. The effort required to raise a bucket of water is equal to the weight of the bucket of water multiplied by half the difference between the diameters of D and C divided by the diameter of D. This pulley block is a very useful implement and with a small expenditure of energy a great quantity of water could be raised each time. For example, if the circumference of D is 2 feet and C is 1.95 feet, one can with an effort of 25 lbs. overcome the resistance due to the weight of nearly 200 gallons of water

or 50 kerosene tins of water. The pulleys must be proportioned to suit local conditions.

There are other systems of pulleys also, but we have only referred to patterns that are most common, cheap and simple and easily installed. Our purpose is merely to direct the attention of Municipal Councils and Local Boards to a defect which certainly calls for early remedy, and we trust they will not grudge the small expenditure required to render the sources of good water supply more easily get-at-able to the public.

We have not referred to the installation of pumps for wells. Pumps are no doubt preferable, but owing to their initial cost and the necessity for expert supervision and maintenance, the local authorities may demur to any expenditure on this account. We, however, see no reason for neglecting to install pulleys or other cheap appliances for lifting water from wells in all cases where pumps are found costly and beyond the means of the local authorities.

Purification of Water.

[BY N. K. GHOSH, B.L., CHAIRMAN, MUNICIPAL
COUNCIL, MYMENSINGH.]

IN every scheme of public water supply of a town or city, the main object is to remove from the raw water all traces of contamination that may infect the supply by reason of the presence of the disease borne germs or bacteria.

Hitherto, the aim of purifying water in all water supply schemes was directed more to the removal of the impurities that are suspended in the water than to the removal of the impurities dissolved in it. In recent years, purity of water in both these directions was thought essential for the main-

tenance of an efficient supply of pure water for domestic and other purposes.

Absolutely pure water is hardly to be met with ; the nature and quality of water varies with the sources of its supply in different countries, climates, and local circumstances. Even the purest rain water coming out from the clouds begins to collect impurities in its descent ; nor is the water coming out from the topmost recesses of inaccessible hills through fountains and rivulets without impurities.

By mere sight it is impossible to find out which water is pure and which is impure. Impurities in water, though disgusting and objectionable to the sight, may not themselves be injurious, but should be removed as far as practicable for the sake of appearance, and on account of their giving facility to the growth of organism. But sometimes sparkling and clear water drawn from shallow wells or from springs passing through marshy swamps or graveyards, though appearing perfectly pure, may contain germs of a deadly nature.

The purification of water is obtained by artificial process (1) by Sedimentation and (2) by Filtration.

The first process of *sedimentation* is the settlement of water for a certain number of hours in large storage reservoirs or special settling tanks in order to remove the floating or suspended matter in the water and clarify it. According as the raw water is turbid, muddy and silty, the period of settlement varies from hours to days. By this process, the suspended impurities slowly get down into the bottom by gravity, and the water up to certain depth becomes more clear and transparent and free from suspended impurities, including the bacteria, to a certain extent but not entirely. The efficacy of the treatment depends much upon the element of time. When the water contains less objectionable matter besides the inorganic sediments, a certain degree of purification is obtainable by mere sedimentation which will render the water fairly potable. But in many cases, however, a

satisfactory result cannot be obtained without filtration. For, in case of a sewage polluted water, settlement alone is quite an inadequate treatment for its purity, as the bacteria are not eliminated sufficiently beyond safety.

Sedimentation however is accomplished by another method, namely, by the use of "Coagulants". These are chemicals which, if added to water, will combine with other substances present in water, forming precipitates which are more or less gelatinous. These act as coagulants to compress fine matters into relatively large particles which are more readily removed by sedimentation or filtration. Generally, alumino-ferric or sulphate of alumina is put into the water for acting as coagulant. The quantity required for action depends upon the quality and nature of the water to be treated. In actual practice, it varies from $\frac{1}{2}$ grain to 3 grains per gallon of water to be treated. Regulation of this must depend upon experience and experiments, as excess of alum in water is not desirable, if not actually harmful or dangerous; the quantity put in excess is wasted because there is a certain limit for the efficient action of alum.

The second process of purification of the settled water is *filtration*. The process of filtration is accomplished by (1) artificial slow sand *filterbeds* constructed and contained in masonry structures of certain sizes and dimensions or (2) by *rapid filters* in the shape of small tanks made of iron as in the case of Jewel or Mechanical Filters.

The first filterbeds of the slow sand type were established for the Chelsea Water Company of London. It is reported that this is the earliest filterbed on a large scale, known in the history of a public water supply. The first object being to remove the turbidity of water, its hygienic importance and efficiency were discovered and appreciated subsequently. The action of the filterbed in purifying the water has led to its adoption in important water supply schemes.

In 1855, filtration of all river water supply of London was made compulsory. In Germany also, the use of this system of filtration was made compulsory. In America, its merits are appreciated, and many cities have installed filterbeds of slow sand type, although as many other towns have adopted the system of rapid or mechanical filtration.

The purity of water by filtration depends upon the following conditions:—

- (1) Construction of the sandbed and its under drains ;
- (2) The rate of filtration ;
- (3) Cleansing of the sand surface (scraping) ;
- (4) The regulation of head ;
- (5) Washing of sand ;
- (6) And lastly on the control of the operation by bacteriological tests.

If the filtration be efficient and well controlled, the result must be the removal of all the suspended matters from water, and the removal of nearly all the dangerous bacteria present in the water. But to secure this good result, not only the filtering plant should be in efficient order, but it must be worked under the control of an efficient officer.

The other method of filtration, largely in use in the United States for dealing with turbid water, is through the Rapid Filters—in contradistinction to the slow sandfilters,—more commonly known as the Mechanical filters. The main principle consists in the addition of a coagulant into the water before filtration for aggregating the particles in suspension and allowing the water to pass rapidly through the layer of coarse sand or crushed quartz from 2 to 4 ft. deep. It is designed to obtain the same result as slow sand filter in a smaller space with a much smaller sand area. In other

respects, the construction and operation of a Rapid Filter is quite different.

Mechanical Filters have a higher rate of filtration than the slow sand filters. The rate of discharge through these filters ranges normally from 100 to 125 millions gallons per acre per day, as against 2,000,000 to 3,000,000 gallons for slow sand filters. The cost of working the mechanical filters is also higher than that of the sand filters, and varies with the condition of the water to be operated upon. A comparative estimate of the cost of working mechanical and sand filters in America, has been found to be £1-2-7 per million gallons filtered for the former, and £1-1-11 for the latter.

Besides, the rapid filters are apt to get out of order easily, but not so the sand filterbeds.

The rapid filters of the type of American Jewel filters are now being extensively introduced in India, and it remains to be seen how they will work after a few years of their installation.

Efficiency of the sand filterbed and the rapid filter in removing the bacteria is not alike. Slow sand filters, as experimented by London Water Supply Companies, have been found to reduce bacteria found in Thames water by between $98\frac{2}{3}$ per cent to $99\frac{1}{2}$ per cent, thereby bringing the number remaining in a cubic centimetre (0.061 cubic inch) within the prescribed limit of 100 after filtration; whereas by rapid filters it was found possible to obtain the bacteria removed ranging in some cases from 86 to 99 per cent only. (Vide Purification of Public Water Supplies by J. W. Hill, pages 198-199).

And although the efficiency of the rapid filters in removing bacteria has sometimes approximated to that of the slow sand filters, this system has not yet stood the same long test of practical experience for over half a century, and requires much more careful watching and testing.

With regard to the comparative value of the two systems of filters, much importance need not be given to mechanical filters on account of the advantage of their occupying less space, because where land is cheap, it is more advantageous to instal slow sand filterbeds; because it is a more reliable and more easily regulated system of purification besides being less costly.

The old crude form of testing the purity of water in any public water supply by the Hankin method by culturing on agaragar tubes the colonies, and counting them has become obsolete. Chemical and bacteriological examination in modern times has replaced the same, and the bacterial purity of water is the test insisted by the Sanitary Authorities in all public water supplies.

Periodical bacteriological examination of water is absolutely essential to ascertain its purity and potableness, owing to the presence of germs, although the latter are vaguely indicated in chemical analysis. By the bacterial examination of water, various numbers of bacteria are found, some of which may not only be unobjectionable, but may perform a very valuable purifying function. But there are found many which are of a harmful nature, such as *bacillus coli communis*—a sure indication of sewage contamination, and others very dangerous to human life, namely *cholera bacillus*, the *typhoid bacillus* and the *anthrax form bacillus* which are one and all conveyed to the human system through water. *Cholera* and *typhoid bacilli* are direct products of polluted water, (Vide *Water and its purification* by S. Rideal) and the third is the result of its being transferred to water from fur, wool and hair in the process of cleansing. As no water is wholly free from bacteria, the efficiency of any system of purification must depend on the extent to which the bacteria reduced and the impurities removed.



Administration of District Boards during 1913-14.

[Punjab.]

We have received a copy of the review of the Government of the Punjab on the Administration of District Boards in that province for the year 1913-1914. The general impression is that though in several respects the state of affairs is below that we are familiar with in this Presidency, there is a distinctly vigorous growth on the right lines. There is keener competition to serve on the Boards; the attendance of the members is larger than in the previous year; roads are well maintained and the need for more and better roads is recognised but limited only by want of funds; the demand for education is more insistent and comes from the people concerned who even offer in the Colony areas houses free of rent for schools, and come forward with liberal contributions. The accounts are properly maintained; there is a welcome relief in financial stringency because of the remission by the Government from the 1st April 1913 of the contribution of 20% on the local rate which was formerly levied for general services, and a genuine attempt is being made to interest the non-official members in the actual administration of their affairs by delegating powers to sub-committees as far as possible. It is found that the interest of members is stimulated by the increased responsibility given them and by providing them more funds to carry out their views. The Government impress on the District officers their duty in trying to discover, develop and encourage, local talent. "The most effective way of doing this in the present stage of local self-government," says the report, "is for the Board to delegate responsibility to individual members or to sub-committees and thus provide a test of their energy and capacity. It is noteworthy that it is chiefly in districts in which an attempt has been made to decentralise that real practical interest in matters administered by the Board has been shown by members, and there can be no

doubt that the adoption of the system of sub-committees and placing of circles in charge of individual members is having an excellent educative effect. It is only by giving members opportunities of undertaking duties in connection with small matters in which they are themselves interested that it will be possible to induce them to participate keenly in the general work of the Board." We remember that the system of sub-committees was introduced in one of the District Boards in this Presidency by Mr. A. Y. G. Campbell, C. I. E., I. C. S., and the system is reported to be working satisfactorily. We hope that the opinion now expressed by so high an authority as His Honour the Lieutenant-Governor of the Punjab will lead to the adoption of the system more widely.

In the matter of aiding the resources of the Boards, the Government think that it is better as far as possible to abolish the system of earmarked grants, as it tends to deprive local bodies of initiative in the expenditure of their revenues and is thus an obstacle to the progress of self-government, and to substitute instead a system of general grants-in-aid, not earmarked for any specific purpose.

There is now a proposal to legislate for the levy of a railway cess for the development of light railways and tramways. "The construction of these" says the Lieutenant-Governor, "would lighten considerably the annual expenditure on construction and maintenance of roads and, in addition, would develop a new source of income." The principle is well received in general by the Boards though some of them are opposed to the increased taxation in their particular areas. So far Madras seems to be the only province where District Boards have been empowered by law to levy a special railway cess for the development of railways. Assam has a similar legislation on hand.

The improvement of the breed of cattle is in this province a duty laid upon the Boards and it is satisfactory to note that some increased interest has been taken in this matter in the

year under report. Veterinary dispensaries continue to gain in popularity in the greater part of the province. Increased facilities for medical relief in out of the way tracts have been provided by throwing open the Canal dispensaries to the public.

The importance of rural sanitation is recognized and special legislation in this direction is under contemplation somewhat on the model of the Village Sanitation Act in the United Provinces.

[United Provinces.]

The resolution of the Local Self-Government Department of the United Provinces of Agra and Oudh presents in a concise narrative form the salient features of the year's administration. In the first place, it is observed that the number of District Boards in the province is 48 or nearly double the number in this Presidency. The area and population under the charge of these District Boards were 106,662 square miles and 47,182,044, respectively, against 132,604 square miles and 38,345,113 in Madras. The percentage of elected members to the total number on these Boards was nearly 70; while that in Madras was less than 46. The incidence of taxation per head of population was Rs. 0-1-3 against Rs. 0-3-10 here. These figures speak for themselves. The resources of the Boards were materially augmented during the year by special provincial grants aggregating to 41 lakhs (exclusive of the usual recurring grants), mainly for educational objects, medical and sanitary works and the improvement of communications. The Government state that these large grants have been followed up by the allotment in the current year of "very large additional recurring income on a scheme of development" of their recurring services on uniform lines and they anticipate that development by making further large grants for initial capital outlay. The enthusiasm and interest evinced by this

Government in the development of the rural areas will, it is hoped, be emulated in other provinces.

Recognising the difficulties in the execution of so many new works which have been suddenly placed on the programmes of the local boards in consequence of the large Government grants, the Lieutenant-Governor contemplates the necessity for the appointment of more sub-overseers and qualified overseers and also of full-time secretaries. Such paid secretaries appear to have already been employed by some Boards and their work seems to have elicited the approval of the local authorities. In the small district of Ballia, the Board shares a paid secretary with the Ballia Municipality and the results of this arrangement are stated to be satisfactory. Having regard to the large area administered by each District Board in this Presidency, we doubt whether a similar arrangement will be practicable here, but the system of having a paid officer to supervise the operations of the Board has its own advantages and may be adopted wherever finances and circumstances permit. We therefore commend it for the consideration of the Madras Government.

The work of the "tahsil" or special committees in regard to the better organization and supervision of the Boards' operations has also been commented on in the review. Much useful work does not appear to have been turned out by these local committees and the system has not been uniformly successful in all places. Nevertheless, the Local Government believe in the possibility of using them to the best advantage, if there is a complete delegation of powers. Their views in this matter may well be quoted here :

"Local committees are of the greatest assistance when they can represent a local area which is already by custom of a distinctly separate character to the rest of the district, and in that case the delegation of powers should be as complete as possible. In any case sub-committees are of little value unless a real delegation of powers as well as duties is made to them. The Government has issued a model scheme for complete delegation, and this may be imitated in lesser degree for minor local committees. An increase in the number of members of the Board has in some cases been found necessary where devolution has been carried out, in order

“ to give the local committee an adequate number of members. The rule recently introduced by which the members of the Board will be attached each to certain primary education circle committees, over which they will preside, is likely to emphasize the inadequate strength of the present Boards for local work, and the Lieutenant-Governor is considering a proposal for increasing the number of tahsil representatives. ”

In the field of education, the activities of the District Boards have been mainly confined to the maintenance and aiding of primary and middle schools for boys. Female education seems to be still backward. Special mention should be made of the experiments started by the Allahabad District Board in half-time agricultural schools. The departure is a healthy sign and we await with interest the results of these experiments.

Under medical relief we are glad to note the very good work reported to have been done by the travelling dispensaries which are the essential complement of the fixed hospital system. These dispensaries are bound to be a boon to the rural population, provided they are manned by sympathetic and qualified medical men ; and we cannot too strongly recommend the starting of such dispensaries in larger numbers in every province.

Rural sanitation is still in its incipient stage, because difficulties are experienced in carrying out works and supervising them. The Local Government are however taking steps to surmount them and we hope that a marked improvement will soon be effected in this direction.

[Central Provinces and Berar.]

The Chief Commissioner for the Central Provinces and Berar in reviewing the annual administration reports of District Boards for 1913-14, concludes that the year has witnessed an increase in the activities of the local bodies in various directions due to the grants made by Government for special purposes and to the establishment of the Divisional Local Fund Engineer scheme. The Commissioner attaches the greatest importance to the proper working of the latter, as it is expected to remove what has hitherto been a great blot

on the administration of these bodies, *i.e.*, their inability to carry out satisfactory measures for public utility in the areas entrusted to their charge. It is pointed out that much remains to be done in most districts for the improvement of communications ; and the advisability of improving the country roads by the construction of good ghat and nullah crossings has been pressed on the attention of the boards. The convenience of the country side is reported to have been greatly enhanced and trade is assisted by the removal of natural difficulties on lines of communication which are much used by carts in the open season.

Education, especially primary education, received a large share of the attention of the boards. Nearly 31 per cent of their total income was spent on public instruction in the Central Provinces and 30 per cent in Berar ; and 183 primary schools were newly started in the former and 102 in the latter. The chief difficulty experienced in this development of education is stated to be the limited supply of teachers. Steps are, however, being taken to overcome it by the introduction of pension to certificated teachers and by increasing their minimum pay so as to attract a large number of competent men. The need for providing additional funds for these purposes has also been emphasized by the Chief Commissioner. Efforts are also being made to increase the number of boys of the depressed classes attending primary schools. It is gratifying to note that seven night schools have been established for low castes in one district in Berar. It is stated that these institutions are intended to attract the children of agriculturists whose field work does not allow them to attend day schools.

The question of provision of good wells in rural areas received some attention during the year and a definite scheme for improving the water-supply in villages was prepared. Standard designs for wells approved by the Sanitary Board were circulated to all Deputy Commissioners and grants aggregating to Rs. 60,000 were sanctioned from provincial

revenues for expenditure by local boards, subject to the condition that, wherever possible, half the cost is to be contributed by the villagers in the shape of cash, material or labour.

Mention may also be made of the good arboricultural work done in this Province. A system of rewards for successful planting of shade trees on road sides and in bazaars appears to have been attended with satisfactory results in some districts and the Chief Commissioner accordingly recommends this system for trial in others. We would invite the attention of the local boards in this Presidency also to this matter.

It is a matter for regret that the authorities have occasion to complain of want of interest on the part of the people and the members of the local boards in the exercise of their franchise or the discharge of their public duties. Elections of members to district councils and local boards do not, the report says, create a very sustained interest, and most of the members are usually apathetic in civic matters. An improvement is, however, now noticeable and the members, on the whole, are gradually becoming more and more alive to the responsibilities and to the opportunities afforded by their position for good work in the localities they represent.

Administrative Experts in Municipal Governments.

[BY A. LAWRENCE LOWELL,* CAMBRIDGE, MASS.]

AFTER what you have heard, I am afraid what I have to say is rather dry, and I can only console myself by considering that dried fruit keeps better than fresh fruit. My only reason for supposing that this subject will be interesting to you is that it is interesting to me. It has been the habit in all ages for men to speculate about what some

* President, Harvard University. Address delivered at the twentieth annual meeting of the National Municipal League. [From the Nat. Mun. Rev.]

extraordinary person from a distant clime would think if he came to visit us. If, for instance, Alexander de Tocqueville, who wrote about America 100 years ago, should return, what changes would he find in our civilization. He would notice that we were very much larger in numbers, but he would notice a great many other things besides. He would observe that the characteristic, which began with the pioneer on the Atlantic seaboard and gradually went westward,—that quality by which every man had to be “a jack of all trades” in every kind of occupation—had practically disappeared. He would notice that no longer did any man expect to be his own farmer, his own hunter, his own carpenter, his own lawyer, and perhaps his own doctor. The pioneer man must be all those things. The people have developed from that type of life. Our country has become like the Europe that he knew, inasmuch as the occupations of men are far more varied and far more specialized than they were when he visited America. He came not very far from the time when cotton mills and railroads began; and at the time any successful merchant was good enough to put at the head of a factory or of a railroad. Now no one thinks of taking charge of a railroad or a factory unless he has had experience in those fields. These occupations are just as specialized as they are in Europe. De Tocqueville would make another observation if he came. He would say “in the industries you have men with special training, men who are not only experts in the highest sense, but who have been carefully educated in schools for the purpose; and, in fact, there is no country where there are better schools for special training than here,—law schools, medical schools, schools for engineers; but while you are doing that in your industrial life you are not doing it in your government. You are not using experts in the public service to the same extent as every other civilized people in the world.” He would go one step further. He would observe—and it is a common saying in the United States—that of all the kinds of government in this country the least successful has been the government of great cities. He would also observe that

it is in those very cities that we use the expert the least ; and, perhaps, being de Tocqueville, he would see some connection between those facts.

What do we mean by an " expert " ? I think we can define an expert simply enough. An expert is a man who by his knowledge and experience in any particular subject is better qualified to deal with that subject than people who have not had such knowledge or experience. You will notice I am specially making the definition very broad, and I am not confining it to those things which we commonly consider the subject of expert knowledge. We all know there are certain classes of experts which we have long respected. We do not want men appointed as judges who are not lawyers ; nor do we want in public hospitals men who are not physicians. Those are the two oldest professions that we know ; but there are new professions constantly developing. To-day we recognize that we should not employ an inexperienced man to build a bridge. We require an engineer. We know that he must calculate the stresses and strains on every piece of steel in that bridge or the bridge will not stand. But there are many other things that only the expert can do well. To-day we never think of putting a man in charge of a railroad who has not been trained in railroad work. Take banking—take manufacturing of any kind—take anything that you please in the industrial world. We put an expert in charge of it. What do we do in our cities ? In most cities any man may be superintendent of streets. Mr. Eshleman has told us that the city fathers should be as harmless as doves and as wise as serpents. We shall all agree that the history of our city governments has not been one of extreme harmlessness or wisdom ; and it is about the wisdom of the serpent that I want to speak to you to-night.

Granted that we use experts everywhere else, why do we not use them in our government to the extent that we might ? For a very simple reason. We are afraid of them. We are afraid that if the expert is put in charge, the people will

lose control over him. We have always been afraid of the expert, and it is worth while sometimes to recall the fact, well-known to every student of history, that democracies until this last one hundred years have always been short-lived institutions. I believe that this is because democracies have never known how to use those expert qualities which are necessary for efficiency. Democracies may be honest, they may be noble, but they cannot be efficient without experts, and without efficiency nothing in this world can endure.

The kind of expert that we need in a city is not merely the expert lawyer as a corporation counsel; it is not merely the expert physician as the health officer, not even the expert engineer as the builder of roads and bridges; but also the expert administrator. It is the man who knows how a great administrative body must be handled, who knows how to deal with the vast amount of business to be transacted; for this cannot be done by any body who happens to get the votes. It must be done by an expert. The administration of a large city is one of the most complicated kind of business which this country has to manage. It requires a knowledge of administrative machinery. It needs a man who knows how to organize bodies of men so that their work shall run smoothly, efficiently and economically.

How is it done in other places? I will not refer to the continent of Europe because they are in the habit of using bureaucratic organizations. I will take England which is just as much a democracy as our country, except that the symbol of the state is a crown rather than a flag.

It is very interesting to go about the English boroughs, and see how they are managed. Everywhere you find a series of shams. The English government is full of shams. No body does quite the work he is supposed to do. For instance, the chancellor of the exchequer is not a chancellor and has nothing to do with the exchequer. There is a very good illustration of such a sham in the trial at Ipswich in *Pickwick*. When Mr. Pickwick is brought before Judge Nupkins and asked why he

was brought there, Judge Nupkins whispers to his clerk,
“ Must I tell him ? ”

“ I think you had better, sir,” whispers the clerk.

“ An information has been sworn before us,” said the magistrate, “ that it is apprehended you are going to fight a duel, and that the other man Tupman is your aider and abetter in it. Therefore—eh, Mr. Jinks ? ”

“ Certainly,” sir.”

“ Therefore I call upon you both to—I think that’s the course, Mr. Jinks.”

“ Certainly, sir.”

“ To—do—what, Mr. Jinks ” said the magistrate pettishly.

“ To find bail, sir.”

“ Yes. Therefore I call upon you both—as I was about to say when I was interrupted by my clerk,—to find bail.” That is hardly an exaggeration. It is what happens every day in England.

Men are constantly being guided by experts and purporting to do the thing themselves as Judge Nupkins did. He did not think that he really was interrupted by the clerk ; he thought it was part of the clerk’s business to tell him what to do. That is one of the commonest, the most essential, features of English local government. The justice of the peace is a country gentleman and employs a clerk who knows the law. I remember a case of a justice of the peace who was in the habit of asking the clerk whether the sentence ought to be three months or six months. To some extent that principle runs through the whole administration of the English Government. The English city is nominally governed by a borough council, composed partly of aldermen, and partly of councillors, the aldermen being elected for a longer term. But how is the government really carried on ? Matters that are to come before the council are first considered by a committee. Behind the council, behind the committee, stands the expert. The day before the committee meets, the expert goes with its chairman over the work to be done, and the chairman generally follows his advice. A good chairman is and ought to

be very much influenced by the opinion of the expert permanent official. After the conference, the chairman practically puts through the committee matters which he and the expert have agreed upon the day before. The work is mainly done at the head of the table. I remember asking a vigorous expert what would happen if the committee insisted on doing something that he did not approve. He said he should tell them that he could not take the responsibility for it, that they must pass a vote ordering it and put it on record. He said they would never assume the responsibility in such a case. They are not Americans, they are English.

Wherein lies the power of the expert? You do not see him ; you know nothing about him. The expert attends the meetings of the committee, not, as a rule, those of the council. You do not see him because it is understood that the expert is not to speak in public except at meetings of a technical society, such as a meeting of engineers. He never appears before the public, he never takes public credit, or blame. The members of the council take the credit and blame. The experts stand behind them and carry on the work of the city, subject to the control of the council. These are, as a rule, the mainspring of the administration and the council is the balance wheel. I remember very well in Glasgow, many years ago, one of the officials telling me that he did not think the city would suffer if the council never met again,—meaning that the town was managed by the experts. I went to see two members of the borough council—one of them was a man of business in a small way and of limited capacity. In talking to him I said something about the experts, to which he replied that they would be sorry to be in the hands of their experts. He was, although he did not know it. The other, a man who was of much larger mould, remarked that the quality of their government really depends upon the excellence of their expert officials, and it obviously did.

But you must control the expert. I am one of those who believe that the best results in every undertaking can be

brought about only by a combination of the expert and the laymen. I do not care what subject you are dealing with, if you do not have an expert on the one side, and a board representing the public on the other, the management is not likely to be permanently satisfactory. A railroad company, for example, must have a railroad man as president, and a board of directors which keeps him in touch with the public. That principle is applicable everywhere in industrial companies, in charitable or educational institutions and in public affairs.

Now, what are the dangers to be encountered? In the first place how about corruption? Is a body of experts liable to be corrupt? Some people fear that permanent officials might steal. Experience in popular governments does not seem to justify that fear. If you will observe the industrial companies and see where improper things are done, where money gets into people's pockets when it ought not to, I think you will find that the grosser frauds are perpetrated by the directors rather than by the experts under them, and for a very simple reason, the expert's whole career in life depends upon his reputation in office. That is true, for instance, in the English boroughs. I never heard of a case, I think, of an expert in an English borough who stole, and I have heard cases of members of the council who cheated the city. One of the borough clerks in England told me after he had ceased to occupy the position that during the last few years of his service he was at the head of a body of officials in the town who were trying to prevent the council from running away with the funds. If any official is caught in corruption, his career in all possible directions is ruined for ever. But if a member of a council is caught doing something that does shut him up in jail, his life is not necessarily wrecked. Moreover, my experience is that membership in an expert profession has a certain steadying influence based upon the general opinion of the profession itself. It is a curious fact but you will find it generally true.

So much for corruption. How about the question of administration of policy? Can you exert in that a sufficient control of the experts? If a young man should say to you that he would like to learn to drive an automobile, but he was afraid it would run away with him, you would think he was not competent to use that kind, or any kind, of machinery. If he is afraid that he cannot control an automobile, he had better walk. So, if our people cannot control experts, they are not fit for self-government on the modern scale. I believe there would be really no serious difficulty in controlling experts and keeping them in check, keeping them in touch with the people; and I should like to give you one example where the use of experts has been very effective.

Twenty years ago the power of the superintendents of schools was as a rule extremely small. I remember it was commonly said at that time that the only function of the superintendent of schools in Boston was to write an annual report. Within the last 20 years the position of superintendents of schools has changed very much. It has become a profession, in which a man is sometimes employed who is not an inhabitant of the city, who has been superintendent of schools in some other town. The feeling against that is rapidly diminishing. The influence of the superintendent as an expert has become very much greater. Instead of the members of the school board trying to select teachers and manage the schools directly, they employ a superintendent who has had years of experience, has expert knowledge, and then back him up; keeping him, however, in touch with public opinion with the result that the relation between the schools and the people is much better, much closer than it was 20 years ago.

The problem of vocational education, which was then in its infancy, has now become extremely prominent. The school authorities are trying much harder than ever before to find out the public needs and supply them. While the experts have more authority, the service rendered by the schools and their

attitude toward the public have very distinctly improved. The same thing is true in England. Twenty years ago the experts in education there had very little power. Since the Education Act of 1902 their power increased very much. There has certainly been no loss of control over experts in popular education.

Do not understand me for some moment to suggest that the use of experts is the only thing needed in municipal government, but it is a very important thing and the one that has hitherto received the least attention, because it conflicts with a popular prejudice which is not well founded. If a democracy is capable of being the best and highest form of government, that which provides its citizens with the greatest amount of happiness, let us not forget also that it is the most difficult form of government to conduct. In other forms of government a few minds must work together ; but here a vast number of minds must act in concert. Instead of educating a comparatively small number of men, you must educate all the people in public things. Democracy more than any other form of government needs the very best instruments which can be used. What should we say of our country if it refused to use for public work modern machinery and inventions ? Democracy needs the best machinery that can be found, the best tools that can be discovered ; and the best tool that the world has ever yet produced is a highly trained human brain.

Audit of Accounts of Local Bodies.

A Municipal Secretary writes to us :—" In the concluding paragraph of the article that appeared in the January issue of the *Local Self-Government Gazette* under the heading "Audit of the Accounts of Local Bodies," it was stated that a concurrent audit, as is being carried on in respect of the accounts of the Madras and other Presidency Corporations, was hardly necessary in the case of District

Municipalities and therefore the accounts of the latter were being audited half-yearly. In the usual course of things, the accounts of most of the municipalities are audited only at the end of the half-year following that to which it relates and by the time the defects are brought home to the local bodies they have been in existence for nearly a year; and others of a similar kind have in addition been added during the interval.

At present when very large sums of money are being sanctioned for expenditure on the construction of school buildings, hospitals and dispensaries, latrines, drains, the purchase of conservancy plants, the sinking of wells and a host of other things, it is very necessary both in the interests of the municipality and also of Government whose money is spent through the municipal agency that every pie of expenditure is accounted for in the same manner in which Government Public Works expenditure is accounted for. Nothing short of an audit of a month's accounts in the following month will ensure a better and more satisfactory result than is at present secured by the half-yearly audit. The next question that may be raised is how this can be secured without making the audit too costly.

According to the present arrangement, ordinarily an Assistant Inspector of Local Fund Accounts is expected to tour in one district and in the case of a small district, in a portion of the adjoining district. His head-quarters is supposed to be Madras and he draws a daily allowance of Rs. 2-8-0 throughout the year. If, on the other hand, the head-quarters of the district in which he has to work throughout the year is made his head-quarters where he has to spend a major portion of the year, in connection with the Local Funds, Special Funds, Forest and Municipal Accounts as also the Jail and Port accounts where such exist, there will be a substantial saving in the daily allowance charges. This is not all; the District Board Engineer's account which is now inspected by him once in a year or once in 18 months, may be inspected or the work of the Local Audit Department in the Collector's

Office may be reviewed monthly, and any serious irregularities brought to the notice of the Accountant General promptly. It has to be admitted that a great portion of expenditure under the Local Funds is on Public Works and that the present arrangement for audit and inspection is anything but satisfactory. The monthly review of the audit work done during the previous month together with an inspection of the District Board Engineer's original records monthly must necessarily give a very good tone to the accounts of the Local Boards. This auditor can also spend one day in every month in every municipality in the district in his charge to audit the Public Works expenditure during the month preceding and to inspect the accounts on the receipts side as well. The recent consolidated Audit Report on the accounts of the District Municipalities, embodied in G. O. No. 2562 M. dated 22nd December, 1914, brings to light no less than ten cases of embezzlements during 1913-14 in certain Municipalities. This discloses a state of affairs sufficiently alarming to justify action being taken to devise means to put an end to them. The monthly inspection of the accounts by the auditor is sure to have a wholesome effect and will tend to minimize the chances of irregularities. The question of cost is not likely therefore to interfere with the introduction of this kind of audit but on the other hand may result in financial saving and will certainly give an efficient and effective audit of both Local Funds and Municipal Public Works expenditure.

The introduction of the Municipal Account Code has placed the municipal accounts on a very systematic and ascertained basis; and the Councils are indebted to Mr. K. L. Datta, the present Accountant General who, while he held the office of the Inspector of Local Fund Accounts conceived the idea of codifying the accounts of the District Municipalities which were then in a chaotic condition and saw it an accomplished fact before he left this Presidency. The experience of 15 years' working under the guidance of this useful code has placed those who are immediately concerned with the work of accounts in municipalities in a position to speak

out with certain amount of confidence on certain changes which may profitably be introduced into the code for the purpose of simplifying procedure in certain branches and of reducing the clerical work involved in the maintenance of the accounts. It has to be noted that the present is a very opportune moment since the author of the code is now the Accountant General of Madras. The present Accountant General is therefore in a better position to appreciate the difficulties and inconveniences that may be felt and represented to him, because as Inspector he had intimate knowledge of the minute details of every work. A proper representation to him is sure to meet with his sympathetic consideration and eventually give relief to the poor low-paid municipal subordinates who handle accounts and of whose educational qualifications, the less said, the better. A simplification to suit the very limited capacity of a Municipal Office Clerk is what is to be aimed at, as "municipal service in the mofussal is not likely to attract better men in the near future."

So far as we are aware, the question of a concurrent monthly audit of the accounts of District Municipalities suggested in the above note has been considered over and over again by the authorities and has been dismissed as impracticable and unnecessary. The cost of such an audit has been found to be prohibitive and quite incommensurate with the results likely to be attained.

It is suggested in the note that all the accounts under the audit and inspection of the Local Audit Department of the Accountant-General's Office in one or two districts might be entrusted to one officer. This is exactly what is done at present. But the number of accounts entrusted to the Officer is so large that it is not possible for him to pay a visit to each Municipality oftener than once a half-year. If he has to visit all the Municipalities in his charge once every month, he will have to waste considerable time every month in moving from place to place.

The audit of Municipal accounts consists of a check of receipts and charges; and the audit of receipts is far more important than that of charges, as defalcations occur chiefly in the former. The large number of defalcations mentioned in the consolidated audit report for 1913-14 and referred to in the above note are cases of loss by theft and embezzlements by municipal employees. The processes of check of receipts comprise chiefly.—

(1) An examination of the demand, collection and balance of taxes and dues having fixed demands:

(2) An examination of the demand, collection and balance on account of miscellaneous revenue of a fluctuating character;

(3) A general examination of the registers and other records.

The important part of item (1) is a verification of the outstanding bills of taxes and a reconciliation of their total with the balance as shown in the demand collection and balance statement. This can be done conveniently once a half-year only. A monthly verification would entail an enormous amount of labour and would be quite ineffective. Item (2) can also be done conveniently only once a half-year. The average number of days at present devoted for the half-yearly audit of each municipal account is only 8. Of these, about 4 days are devoted to the audit of fixed items of revenue, one day for the examination of the registers and records and the other three days for the examination of vouchers for expenditure and the check of fluctuating items of revenue. If the first two processes are to be done monthly, it is likely to take longer than four days every month, i.e., more than six times the time at present taken in the half-yearly audit. This part of the work must therefore be left to be done half-yearly as at present. As regards expenditure of District Municipalities, all important expenditure on the construction of water works, drainage and other sanitary works are incurred through the agency of the

Government Public Works Department and this is all audited monthly in the Accountant-General's Office like all Government Public Works expenditure and the amounts payable by Municipalities are recovered in lump sums. The expenditure of Municipalities which comes under the audit of the Local Audit Department of the Accountant-General's Office consists of generally fixed charges for establishments in the several departments of the Municipality, the cost of repairs of roads etc., the cost of maintenance of water works, construction of small buildings and other minor items. Very few irregularities are discovered in these and their monthly audit is not very important and is not likely to lead to any marked improvement in efficiency. If the audit of expenditure and of fluctuating items of revenue is carried on monthly, they would occupy at least one day every month instead of three days every half year as at present and another day would be required to move to the next station so that the time required would be three or four times the time required at present.

The audit of District Board Accounts, Special Funds, etc., referred to in the note is done monthly either by the Local Audit Staff under the Treasury Deputy Collector or in the Accountant-General's Office; and it would be sheer waste of time to get this work reviewed by the Local Audit Department every month. At present that Department test audits these accounts for only two months in the year, one of these being invariably March.

As regards the suggestion that the head-quarters of a district should be fixed as the head-quarters of the Assistant Inspectors, it should be remembered that these officers are never allowed to be in charge of the work in a particular district longer than a year, a very salutary rule as it prevents them from being familiar with the local officers whose accounts they are required to scrutinise and their stay at any particular place is usually comparatively short, as they are generally in charge of two districts and have a large number

of places to visit within them, sometimes twice in the year. As it is not possible therefore for them to fix their habitation for any length of time at any place, it is only fair that they should get their daily allowance even when they are at the headquarters of the districts.

Prevention of Waste of Municipal Water.

THE Government of Madras have none too soon directed the attention of Municipal Councils to the necessity of strictly conserving all protected water supplies. They have in their order No. 139 M. dated the 1st February 1915, issued instructions for the prevention of the waste and misuse of water in the mofassil municipalities. The order is based upon the clear and full report of Mr. W. Hutton, A.M.I.C.E., Sanitary Engineer to Government, upon the perplexing question of wastage of water. Mr. Hutton has gone into the matter thoroughly and his note which is printed with the G. O. covers nearly 23 pages of printed matter.

We observe that excluding the City of Madras there are twenty-five towns provided with water-works. In seven of these towns the water-works have only lately been inaugurated, and in five of these seven towns, Government direct that no house connections should be allowed until the works have been in use for a full year and the sufficiency of the water-supply thoroughly tested, and even then not without the express sanction of the Sanitary Engineer. In five other towns, the Councils have been advised not to grant any house connections until the existing supply which is considered inadequate has been sufficiently improved. For the remaining towns, a limit has been imposed on the house connections to be permitted, the rule to be that no new house connections should be sanctioned for buildings of an annual rental value of less than Rs. 100. In the case of one of the towns in the latter class, this limit has been raised to Rs. 200, it being a hill station.

Government observe that as the law stands at present, it is not possible for Councils to fix meters to existing house-connections except at their own cost; and consequently to fix meters on a large scale will be financially impossible. But the Government consider that it should be practicable to meter connections where waste is suspected. The Act, however, enables the insistence of a meter for all new connections, and Government accordingly direct that no new house services should be granted unless the house-owners agree to, and pay for, metering them; subject however to the limitations described *supra* in regard to the assessable values of the buildings concerned.

Mr. C. J. Renner, Civil Engineer, concludes an interesting article on "the experience of a small city (St. Albans) with water meters and water rates," with the following statement, in the *American City*:—The summary of the whole matter is that meters are indispensable where the economic management of a water-works is concerned. They prevent water famines and unnecessary waste, and also give us the only fair basis for governing the sale of water. While maintenance charges are an extra expense, this expense is small when compared with the benefits resulting.

The scale of free allowance recommended is based upon the rental value of the building and varies from 30 to 800 gallons a day; and Government direct that a uniform rate of 12 annas per 1,000 gallons should be charged for all consumption—for domestic or non-domestic purposes—in excess of the free allowance. Government further advise the Councils to provide in their budgets year by year for the purchase of meters on existing connections where waste and misuse of water are already occurring.

We have briefly indicated above the salient points in the Government Order and trust that Municipal Councils will heartily carry out the instructions of Government. We cannot too strongly emphasise the necessity of preventing and checking the waste of water. Apart from the insanitary conditions

that are likely to arise in towns where there is no efficient or adequate drainage, unchecked waste and misuse of water add to the cost of maintenance of the water-works, especially if it is a pumping scheme and not a gravitation scheme.

We guess that the Government Order in question will not be the last word on the subject; for in all efficient water-works, it is recognised that waste occurs not only at the taps and fountains but through the distribution system. It has been found that large quantities of water leak through defective valves, leaky joints in street mains or house pipes, defective taps or other fittings on the street mains or service pipes. We would suggest to Government the advisability of installing waste water meters on the distribution systems. Unless these are installed and worked side by side with house meters, waste of water cannot be effectively prevented or checked. There is as much, if not more, waste of water through leaky joints and fittings as through the extravagant habits of the consumers.

In a paper recently read before the American Public Health Association at Jacksonville, Mr. H. Y. Carson said : " It is common knowledge among water supply engineers that an enormous amount of public water (sometimes as much as a fourth of the total consumption) is wasted through bad types of plumbing fixtures. Metering individual services does not prevent the loss, although it makes it possible for the water corporation to more accurately adjust the charges against the consumers. In this respect the matter of good and bad types of plumbing fixtures in common use at the present time must be considered. The plumbing laws must point out to the public which types are bad, but special provision must be made to eliminate improper plumbing equipment which may cause an unnecessary waste of water down the sewer. Another very important item is the water wasted annually through the defective service connections, poor jointing of pipe and the injudicious selection of piping materials. A large part of

these useless water wastes belong to the realm of bad plumbing."

In our opinion, therefore, all existing water-works should be provided with the district waste water meters, and all future schemes should make provision for such metering. In this connection, we are glad to note that Mr. J. W. Madeley Special Engineer, Corporation of Madras, is alive to the importance of the district waste water meter system which he proposes introducing into the Madras water-works.

Notes.

The Bombay Corporation.

A POINT OF ORDER.—At the meeting of the Corporation held on the 11th February, Mr. Cowasji Jehangir proposed and Dr. E. Moses seconded "that the Budget Estimate in respect of expenditure for the year 1915-16 for the maintenance of public gardens (as per detailed statement No. 7 and schedule attached thereto) be adopted at Rs. 82,300." In accordance with notice of motion, the following amendment was proposed by Mr. Phiroze C. Sethna :—

That the Budget Estimate in respect of expenditure for the year 1915-16 for the maintenance of Public gardens be adopted at Rs. 87,300, the Standing Committee's Estimates for the Expenses of the Band Performances at the following places being increased as under :—

- (1) Victoria Gardens, from Rs. 2,000 to Rs. 3,500.
- (2) Esplanade Band Stand Green from Rs. 2,500 to Rs. 5,000.
- (3) Chowpatty Band Stand, from Rs. 900 to Rs. 1,900.

The amendment was seconded by Mr. Jamsetji A. Wadia.

In the course of his reply to the debate on the question, Mr. Cowasji Jehangir spoke in favour of the amendment. Thereupon the Hon'ble Sir Ibrahim Rahimtoola, Kt., C.I.E. raised a point of order as to whether the Chairman of the Standing Committee after having moved on behalf of the Committee a

proposition in accordance with the Committees recommendation could in replying to the debate, speak in favour of an amendment to the proposition.

The President observed that Mr. Cowasji was entitled to express his views on the merits of the amendment and that he considered that the question was not one of order but of discretion as to whether at that stage of the debate the Chairman of the Standing Committee should express himself in favour of an amendment to the proposition for adopting the Committee's recommendation.

The amendment on being put to the vote, was lost, there being 7 votes for it and 15 against it.

The original proposition was carried.

THE CORPORATION BUDGET FOR 1915-1916.—The Revenue expenditure for the year 1915-16 as finally passed, amounts to Rs. 1,28,89,948 and the total revenue for the year including the opening balance amounts to Rs. 1,61,07,666; the closing balance is Rs. 32,17,718 which is less than the opening balance by Rs. 6,52,948.

LEGISLATIVE COUNCIL ELECTIONS.—At the same meeting the following letter from the Secretary to Government, Legal Department, was considered and recorded :

“ I am directed to invite your attention to this department letter No. 710 dated 25th June 1913, in which you were requested to report whether the last elections to the Legislative Council brought to light any points in which the election rules needed amendment.

“ 2. I am now directed to inform you that on receipt of the reports of the several returning officers, Government referred to the Government of India a list of the amendments which they were prepared to adopt. The Government of India while expressing the opinion that certain of the proposed alterations are unnecessary, lay stress on the desirability of having the rules for the various Legislative Councils in India as much as possible in conformity with each other and are unwilling to amend the rules of one province until it may become necessary to undertake a general revision of the rules. In view of this, Government has decided not to proceed further with the revision of the local rules for the present.

BURSTING OF WATER MAINS.—We, in Madras, remember the inconvenience caused to the public during the last Christmas week, by the water-supply being cut off on account of the bursting of two of the water mains. We notice from a report of the Hydraulic Engineer of the Bombay Corporation that at 2-45 p.m., on Wednesday the 13th January 1915, the 48" Tansa main burst at Matinga. The work of replacing the broken pipe was immediately put in hand and completed by 1-0 a.m. the following day and the usual supply was restored by 2-30 a.m. The burst was found to be due to the blasting operations which were being carried out in the vicinity by one of the Improvement Trust's contractors in connection with the construction of a new road.

Rangoon Municipality.

THE WAR AND MUNICIPAL EMPLOYEES.—At a recent meeting of the Rangoon Municipal Committee, the question of the grant of allowance to Municipal employees offering their services in the Burmah contingent proceeding to Europe came up for consideration, and it was decided that the Committee should give those volunteering their services an assurance that their appointment would be kept open for them, that they would be granted full pay for the period of privilege leave that might be due to them if they desired to avail themselves of it and that during the remainder of the period of their absence on military duty, they would be given an allowance equivalent to not less than half pay in the case of single men and not less than two-thirds in the case of married men, the allowance being paid to their nominees.

SOCIETY FOR THE PREVENTION OF INFANTILE MORTALITY.—At the same meeting, a letter from the Vice-President of the Society for the Prevention of Infantile Mortality asking for a monthly grant to enable the Society to carry on its charitable work was considered. The Public Health and Markets Sub-Committee reported that it considered that as the

aims of the Society were what the Municipal Committee had for years been striving for, namely, the reduction of the appallingly high death rate among infants, that was the kind of Society the Committee had been anxious to see formed and were willing to subsidise, and that the Society was deserving of every encouragement and support, and recommended that a contribution of Rs. 400 *per mensem* be made to the Society to assist it to carry on its work by the appointment of four nurse midwives and that provision be made for the same in the next year's budget. The Sub-committee's report was adopted.

Gorakhpur Municipality.

The Municipality of Gorakhpur, in exercise of the powers conferred by Section 59, Sub-section I, Clause (c), of the United Provinces Municipalities Act, 1900, has imposed the following tax with effect from the 1st day of April, 1915:—A tax on all horses and ponies used for riding, driving or draught and on all vehicles (including motor cars and cycles) kept within the limits of Gorakhpur Municipality, to be levied at the following rates:—

				Rs.	A.	P.	
Horses and ponies	...	...	0	4	0		each <i>per mensem</i> .

VEHICLES.

Motor cars and motor cycles	...	0	5	0			per wheel <i>per mensem</i> .
Other vehicles including cycles, hand and bullock carts kept for private use	...	0	1	6			per wheel <i>per mensem</i> .

But if the tax is paid in advance for a whole financial year before the 30th April, the following rates shall be charged:—

Horses and ponies	...	2	4	0			<i>per annum</i> .
Motor cars and motor cycles	...	3	0	0			per wheel <i>per annum</i> .
Other vehicles including cycles, hand and bullock carts kept for private use	...	0	12	0			per wheel <i>per annum</i> .

Jalesar Municipality.

The Municipal Board of Jalesar (United Provinces) has, in exercise of the powers conferred on it by Section 59 (1) of the United Provinces Municipalities Act, 1900, and with the previous sanction of the Governor-General in Council, imposed the following tax in the Municipality of Jalesar, with effect from 1st day of April, 1915 :—A tax on all persons residing or carrying on any trade or profession or owning property within the limits of the Jalesar Municipality, to be levied according to their circumstances and property at the rates noted below :—

On incomes from Rs. 100 to Rs. 150, Re. 1 per head *per annum*.

Do. Rs. 151 to Rs. 500, Rs. 2 per cent *per annum*.

Do. Rs. 501 and over, Rs. 3 „ „
subject to a maximum of Rs. 500. Incomes below Rs. 100 *per annum* shall be exempt.

Ghaziabad Municipality.

The Municipal Board of Ghaziabad, in exercise of the powers conferred by Section 59 (1) (b) of the U. P. Municipalities Act, 1900, has imposed the following tax in the Municipality of Ghaziabad with effect from January 1st, 1915 :—A tax on all persons (except zamindars, cultivators, and public and private servants) carrying on any trade or profession within the Municipality at $2\frac{1}{2}$ per cent on net annual profits of Rs. 100 or upwards subject to a maximum individual assessment of Rs. 300 *per annum*.

Anantapur.

TOWN EXTENSION.—The Municipal Council of Anantapur being of opinion that in spite of earnest efforts, the town extension is not freely resorted to by the people, owing to the insecurity of their person and property, resolved to approach Government for the sanction of a Police outpost for the exclusive use of Georgepett.

WATER WORKS.—The Council gratefully thanks the Madras Government for the special concession shown to it in meeting the whole cost of the water-works amounting to Rs. 20,400 from Provincial funds, and has resolved to raise the rate of tax on buildings and lands from $7\frac{1}{2}\%$ to $8\frac{1}{2}\%$ and also to levy the water and drainage tax at the rate of 8 %. The resolution will be brought into effect from the year in which the works are opened for public use.

Amritsar.

The Municipality of Amritsar has applied to the Government of the Punjab for the grant of a license to supply electric energy for all purposes within the Municipal area of Amritsar. The draft license is published in the Government Gazette for public information.

Ootacamund.

Government have approved the proposal of the Ootacamund Municipal Council to employ Mr. H. M. Fulton, representative in Ootacamund, of Messrs. Walker Sons & Co., Limited, Colombo, for the preparation of plans and estimates for a scheme for the electric lighting of Ootacamund.

Town Refuse.

A Continental Method of Disposal.

OF late years, Barman, Germany, a city of 1,72,000 inhabitants, has used an incinerator for disposing of its garbage, including not only kitchen waste, but rags, paper, old clothing, and the refuse of a great city. An account by Vice-consul Julius Frestner states that the plant has given excellent satisfaction, and has not only removed the useless material in a sanitary way, but has yielded two products of value—a good quality of sand for bricks and building purposes, and a supply of electricity. After burning for an hour in the furnaces, the refuse is reduced to slag which is

broken and ground in to the sand of various grades. The gases from the burning, with a temperature of 1200 degrees to 1500 degrees C., pass to two boilers and generate steam for a 600 horse power with an axle directly connected to that of a 400 kilowatt dynamo. The electric current is sold for less than a half penny per kilowatt hour to the Municipal Electric Works by which it is retailed to the public at under three pence. The furnaces dispose of about 22,000 tons of garbage annually, and this supplies 11,000 tons of slag or clinkers and 1,700,000 kilowatt hours of electricity.—*Pop. Sc. Sif.*

Statistical Information.

Infant deaths up to 1 year of age during 1913.

THE following table shows the necessity for increased attention being given to the subject of infantile mortality. It will be noticed that mortality is generally very heavy during the first month; a very large percentage of it is due to prematurity or debility at birth and tetanus neonatorum. There can be no doubt that a great deal of the mortality is preventable. By training the *daces* and by employing qualified nurses to render free aid in all cases of delivery where they are requisitioned, the rate of mortality may appreciably be reduced. There is much scope too for philanthropic lady-workers in this direction.

		Population according to the census of 1911.	1 to 30 days.	1 to 6 months.	7 to 12 months.	Total.
Bombay	...	979,445	2,591	2,203	2,694	7,488
Calcutta	...	896,067	2,657	1,317	1,080	5,054
Madras	...	518,660	2,523	1,521	1,669	5,713

Public Health and Sanitation.

The Progress of Sanitary Science in America.

WE seem to have definitely passed away from that state of mind in which it was customary to uphold German ideals as affording a lesson for us to imitate, and from which we could learn something to our advantage, and we are beginning to realise that, after all, our own English way of doing things is probably best suited to our own needs. Nevertheless, we are always ready to take a hint from other nations and profit by the experience that they have gained. Of all peoples of the earth who have devoted serious attention to problems of sanitation, apart from ourselves, the Americans stand in the foremost rank, and a paper on "Public Health Education in the United States," by Mr. C. A. Winslow, Director of the New York State Department of Health, tells of the progress that has been made in the development of an effective public health campaign during recent years. The advance has been in four stages, the first three being the discovery of the germs of disease in the eighties, the discovery of the vehicles of disease (water, milk, and insects) in the nineties, and the discovery of preventive and curative vaccines and sera, would be included by everyone, and the fourth is the discovery of the value of public health education. This discovery we owe primarily not to the professional sanitarian, but to the sociologist. It was in the campaign against tuberculosis that the importance of reaching the individual citizen and teaching him about the conduct of his individual life was first definitely grasped. In the case of this disease it was quite clear that the most important of all measures were those which built up the vital resistance of the body and maintained the fighting edge which is so effective against this particular microbic enemy. Sanitary shops and tenements were needed; the sanitary care of sputum was needed; but above all, healthy habits of individual living were essential. Hence the anti-

tuberculosis movement became a great campaign of popular education. It was animated by a new idea, the idea of bringing hygienic knowledge right to the individual in his home or in his shop ; and it developed a new machinery, a new system of organisation for bringing about this end.

The United States receives hundreds of thousands of immigrants from Europe and has to face the problem which is presented by the lower civilisation to some of these people much in the same way as we in this country have had to face it in connection with the destitute aliens who have come to us in such large numbers at various periods in the past. In America, special efforts, too, are made to reach the people who do not voluntarily seek instruction. To this end racial and religious machinery is often set in motion ; but the self-activity of those directly concerned is always stimulated, so that they realise that it is after all their problem. A group of Polish leaders will be called together, for example, and their attention called to the excessive infant mortality among their race. "What are you going to do about this ?" is Doctor Evans' question. "Your people are in just so far a burden upon the community. We are here to help you remedy this ; but the first steps must be taken by you yourselves. What will you do ?" The older immigrants are often hard to move, but the younger generation is responding to such appeals. With the audiences of children gathered together at the social centres of the small park system, the lecturers of the health department find eager attentive listeners.

These methods have proved so successful that most of our progressive health departments are now applying them with more or less completeness. The field is a new one and much of the work is of course experimental. Much valuable work has been done by exhibiting in public health museums models illustrating the various phases of sanitary work.

The models dealing with the disposal of city wastes include local illustrations of pollution of shellfish, floating ~~baths and other~~ dangers of the harbour waters of New York,

and a detailed presentation of the methods of treating city sewage by screening, sedimentation, filtration and disinfection. The bacterial exhibit consists of a series of glass models of the principal disease bacteria 25,000 times natural size of photomicrographs illustrating their relative size and shape, and of actual colonies of many types of useful and harmful bacteria, showing how mass cultures of the microbes look to the naked eye.

The relation of insects to disease is a particularly fruitful field for museum work, and is the one upon which we are chiefly engaged at the present time. The American Museum already has in its department of invertebrate zoology wonderful enlarged models of mosquitoes, and the department of public health has just installed a model of the house fly, enlarged forty diameters, which took its skilled artist modeller nearly a year to complete. A wide series of facts bearing on the life history of the fly are illustrated, as well as the relation of the fly to the disease, the practical methods for its control, and the results achieved thereby. A similar, but more enlarged model of the flea (carrier of bubonic plague) is now under preparation, and we have already installed models, some small and some life size, dealing with rats which harbour the plague microbe and from which the flea carries it to man. The opportunity for future development here, and in connection with the mosquitoes of malaria and yellow fever, and a score of other disease-carriers, is a tempting one, which we hope to develop in the next few years.

They are certainly doing things very thoroughly in America, for besides studying the influence of microbial life and insect life on health, it appears that the forces of public health education have been further augmented by the establishment of a new organisation, the Life Extension Institute. Its aims are: "To endeavour by systematic education and suggestion to inform the people regarding the simple laws of health as now known to science, and to arouse among them a sense of responsibility for the better observance of such laws; to

stimulate a sense of personal pride in a sound mind and a sound body and to establish a system of periodic examination of the human body so that disease or disease tendencies can be discovered in time to employ effectively the daily increasing resources of medical science."

The field of public health constantly broadens, and prevention steadily takes the place of cure. The process will not cease till the communal causes of diseases are cleared away, and the individual citizen is so trained in the proper conduct of his daily life that "he will learn not to treat the heart and blood vessels as a careless and reckless school boy treats his bicycle, but as a skilled engineer treats a strong, yet delicately balanced piece of mechanism that re-acts quickly, silently, mysteriously to every touch of the skilled hand." When that day comes, not only will microbic diseases be controlled, but the constitutional diseases themselves will be robbed of their worst terrors, and premature death will no longer be the common lot of man.
—*Loc. Govt. Chron.*

House Inspection by Medical Officers of Health.

In a recently published Report, the Local Government Board say as follows:—

A point of great practical importance in connection with the matter of inspection is referred to by the medical officer of health for the county of Somerset in his annual report for the year 1912 in the following passage which we quote in extenso from that report:—"There is one point deserving special mention in regard to procedure. A very great deal of time is spent by the officials in re-visiting houses in which defects have been found and in inducing owners to remedy these defects. While it is very desirable that due consideration should be shown to property owners and that reasonable time should be allowed them to execute repairs, it is obvious that there must be a limit. The valuable time of officials should not be frittered away in repeatedly calling the attention of property owners to the existing defects and in allowing vague promises to deal with the defects to take the place of carrying out the repairs

required. In some districts this consideration for defaulting owners has been carried to an absurd extent and an immense amount of time belonging to public authorities has been lost in consequence.

“For such evasions and delays the blame rests not so much upon the property owners as upon the local authorities and their officials. Naturally if promises and evasions are constantly allowed to be substituted for work done, promises and evasions will continue to be made. There is a time when so-called ‘tact’ ceases to be effective and its continuance is merely a waste of public money. I have repeatedly seen considerable defects, in regard to which informal notices have been served, unremedied after twelve to eighteen months, and on asking the reason have been told the owner has promised to put the defects right but has not yet done so.”

On the other hand, it is of course desirable that necessary repairs to property should be effected in friendly co-operation with the owner where this can be done without loss of efficiency or undue delay, and there are doubtless many districts where this is practicable. It is of such a district that the clerk to the Otley urban district council writes:—

“I should like to point out that since the Act of 1909 came into force the mere fact that the new powers as to closing orders existed has been a sufficient lever for the inspector and the sanitary committee to enforce a large number of small improvements calculated to render dwellings more habitable without recourse to formal notices or legal proceedings. In this district I have advised the sanitary committee to have various portions of the town in turn thoroughly inspected as regards housing. When the Inspector found cases of bad ventilation, unhealthy floors, walls, or other defects of this character, he has been instructed generally to point the same out to the owners at once and report the result of his conversation to the committee. If the owner was unwilling to accept the inspector’s view, the committee or a sub-committee formed for the purpose, have viewed the premises and met

the owner, informing him of the extent of their powers under sections 15 and 17 of the 1909 Act, but urging him to voluntarily carry out the work required. This policy has been so far successful that not a single notice under either section has been needed during the last twelve months although many dozens of dwellings have been rendered more habitable after inspection and interviews."

Model Lectures on Sanitary Subjects.

[PREPARED BY MAJOR W. A. JUSTICE, M.B., C.M., D.P.H.,
I.M.S., SANITARY COMMISSIONER, MADRAS.]

Consumption.

Air is necessary for the life of all animals, and man like the other animals must have a supply of pure air to maintain life. Air is taken in through the nose and mouth and thence it passes down a tube, the wind-pipe, to enter what are called the lungs. These are two large elastic bags, which lie one on each side in the chest, and when a man breathes, he draws air into them. The good fresh air is taken into the body from the lungs and bad air which has been used up by the body passes out again into the lungs, which now contract and so expel the bad air and thus become ready to expand again and draw in another supply of the fresh air which the body needs. This drawing in of pure fresh air is so essential to life that even when a man is asleep or unconscious he must breathe or he dies. But for this process of breathing in fresh air to go on continuously it is not only necessary that the lungs should be strong but they must also maintain their elasticity. Just as a balloon which cannot be filled with gas is of no use, so a lung which cannot expand and contract is useless.

Consumption is a disease which attacks these elastic bags, the lungs, and prevents them from expanding and contracting properly. The disease is due to a very small poochi so small that it cannot be seen without the aid of a very strong magnifying glass. These poochies lodge on the walls of the lungs and work their way into the substance, here

they multiply rapidly and by their irritation produce inflammation which causes the walls of these air bags to become thickened, so that they can no longer expand and contract. The poochies at first perhaps only settle on one portion of the wall of a lung, but they multiply so rapidly that there is no room for them all in one place, so they travel along the wall and even go over to the lung also, so that though at first only a small portion of the wall of one of these air bags may be thickened and unable to expand yet, as the poochies spread, more and more of the walls of these air bags become involved, and thickened till at length the patient dies because his lungs can no longer expand and draw in the good pure air which is necessary for life; or the poochies may even eat their way through the walls of the air bags and what use is a balloon with a hole in it.

This disease consumption is very common in India. It generally begins with a cough because the lungs are trying to expel the nasty poochies, sometimes the individual who is affected with this disease coughs up blood for these poochies eat their way into the substance of the lungs and so make them bleed. The consumptive also sweats very freely especially at night and rapidly loses flesh. Each time he breathes out the bad air from his lungs, or coughs, he expels into the outer air hundreds of these minute poochies and if other healthy people, members of his own family perhaps, breathe in the air containing these poochies, they too will develop the disease. Therefore the consumptive should live apart from other people as far as he can do so. He should never sleep in the same room, especially with doors and windows closed, as other members of the family or these too will surely get the disease. The consumptive coughs often and brings up phlegm. This phlegm also contains hundreds of these little poochies, and if the man spits on the floor of his house, the phlegm dries up and becomes dust and is blown about by the wind. The poochies go with the dust, for the drying does not kill them, and so enter the lungs of healthy people and give them the

disease also. The consumptive should never spit on the floor, but should into a piece of a paper or rag which should afterwards be burnt to kill the poochies. The poochies of consumption do not like good pure fresh air, or sunlight. They live and grow much better in damp, dark, dirty, rooms and where the air is not fresh but contaminated by the exhalations of several people. Plenty of air and light must therefore always be allowed to enter the rooms. Consumption is a disease which can be cured only when it is in an early stage, not when a large portion of the lung or lungs is affected; so, as soon as the first symptoms of the disease such as cough and loss of flesh appear, the man (or woman) should go at once to a hospital and so perhaps save his own life and prevent others of his family from catching the disease.

Dysentery.

The digestive tract consists of a long tube which is not however of uniform diameter throughout its length. When we take food it passes down into the stomach which is the first dilated portion of the digestive tube; here it is acted on by the digestive juices of the stomach so that it can be absorbed into the body. It then passes on into a narrower longer portion of the digestive tube known as the small intestine and whilst passing along this, the food required by the body is absorbed through the walls and taken by the blood to the different parts of the body. But not all the food taken in by the mouth is absorbed; there is always a certain amount of residue which is not required by the body and which is indeed harmful to it. This residue passes into the next part of the digestive tube, the large intestine and here it remains and accumulates until expelled as fæces. This mass of fæces lying in the large intestine is very poisonous and if it could find its way through the walls of intestine it would be very injurious to the body. Dysentery is a disease which attacks this portion of the digestive tube—the large intestine. The disease is due to a very small poochi—so small that it can only

be seen by the aid of a powerful magnifying glass. These poochies thrive and multiply in the large intestine once they have gained access to it. They work their way into the walls of the intestine and by their irritation set up inflammation and destroy the protective being of the digestive tube, and as a result of this, some of the poisons pass through the walls and into the blood or if the inflammation is very severe or lasts very long, portions of the walls of the large intestine are gradually eaten through, just as a pipe is corroded, and the contents escape into the body and so kill the individual.

The disease often begins with diarrhœa, several motions being passed daily, but very soon slime and perhaps blood too are passed and there is a great deal of pain on passing a stool. These symptoms are due to inflammation in the wall of the large intestine caused by the irritation of the poochies. On account of the irritation the large intestine contracts frequently and each time it contracts it expels some of the fæces lying in it, and with the fæces some of the poochies causing the disease. It is therefore very necessary that these stools should be destroyed so that the poochies may be killed and thus prevented from finding their way into other human beings. The stools must not be passed on the open ground where they may lie until a shower of rain comes and washes them away into the nearest river, tank or well, the water of which is perhaps used for drinking purposes. If this occurs, then, the people who drink of this water will also develop dysentery. Another reason why stools must not be allowed to lie on the ground is that flies will settle on them and the minute poochies will cling to the legs and wings of the flies which will then perhaps fly away and settle on some rice, conjee or milk in which the dysentery poochies will rapidly multiply, so that when any one drinks this conjee or milk that person too will become infected with dysentery. Stools must always be destroyed by fire or buried in trenches in ground set apart for the purpose and the stools must be covered with a thin layer of dry earth. Dysentery is therefore a disease which can be

spread from one person to another, and any one suffering from it is consequently a source of danger to others and should seek medical advice at once ; dysentery can generally be easily cured if treated as soon as it begins, but if allowed to become chronic, it is very difficult to cure, as the walls of the large intestine become permanently injured and beyond repair.

Guinea-worm.

Probably many have seen people with guinea-worms being gradually extracted by twisting them around a small piece of stick.

These are the female worms 1-3 feet long, $1/10$ inches in diameter containing a long narrow bag (the womb) full of minute invisible babies (embryos) in thousands. The head end comes to the surface and makes a little hole in the skin ; if water be poured on the skin near the hole and the worm be watched, after a few minutes a drop of milky fluid comes out of the worm. This fluid is full of hundreds of babies (embryos). The tail end of the worm has a curved hook so that if the worm is pulled forcibly it will not come out but breaks off and all babies escape under the skin and cause much pain and irritation. If a man with a guinea-worm goes into water all the baby guinea-worms get into the water and swim about there. In the water they find small animals, some of them transparent about the size of a pin's head are called cyclops. The babies get inside the insect (cyclops) and live on it and grow strong and bigger at its expense. Then one day some one drinks the water and swallows these insects (cyclops). In the stomach the insect (cyclops) is killed and digested and the baby guinea-worms get out and crawl through the stomach wall. Then they crawl all about the body gradually growing bigger and after 10-12 months the females which are now full grown and full of babies come to the surface usually in the legs and make a small hole there.

So you see that the popular connection of certain wells with guinea-worm is perfectly true.

Prevention is very easy; simply by filtering all drinking water through fine muslin, which is dried in the sun when not in use. In this way no insect (cyclops) can be drunk.

But you will ask would it not be better to prevent the water being infected. The answer is "Yes", of course; but then you must stop people with guinea-worms from washing themselves in or near the drinking-water well. Indeed it is better that none at all should wash in or near the drinking-water well.

Cholera.

All of you have heard of and some may have seen this terrible disease which often kills numbers of people in a very few hours with dreadful pains, horrible diarrhœa and vomiting.

I want to show you how to prevent this disease from coming and how to prevent it from spreading to others as it usually does.

First you must know how it spreads.

INFECTIVE AGENT.—Each person with cholera has inside them many millions of tiny invisible germs (vibros). These are discharged in the vomit and stools. If any of these tiny germs get into water or food, they may be swallowed by some one and that man will then get cholera.

TRANFERENCE—(a) *Water*.—But you will say none could possibly drink or eat things polluted in this way. I will explain how this may happen. I must tell you that some people may get cholera very mildly like an ordinary attack of diarrhœa. Suppose some of these people wash themselves or their clothes at or near a tank or well; very soon a shower of rain comes and then these tiny germs are washed into the well or tank, so that people who drink out of that tank will swallow some germs and probably get cholera.

(b) *Flies*.—Sometimes also flies may settle on cholera vomit or stools and thus carry the tiny germs on their feet

and settle on food, so that the food may now give cholera to those who eat it.

PREVENTION.—There are many ways you may use for preventing cholera—

(a) *Personal*.—It is necessary always to drink and eat clean food and water. To make the water clean and safe it should be boiled and then allowed to cool in a covered vessel. All food should be prepared at a distance from cholera cases so that cholera carrying flies cannot get at it.

(b) *General prevention*—(i) *Isolation*.—All those people who have cholera should be separated from other people and arrangements made for looking after them and for destroying their stools and vomit.

(ii) *Water*.—Wells should be treated by adding a small handful (2 ounces) of permanganate of potash crystals and thoroughly stirring. If the water is still pink next morning, it may be used; if not pink more permanganate of potash must be added in the same way.

The pink permanganate crystals when dissolved in water are able to destroy the cholera germs and so make the water safe to drink. Of course this is only temporary and the water is only safe for about one day after purifying in this way. But you will ask is it not possible to make a well safe for always? I will tell how to do this.

PERMANENT PREVENTION.—Choose a good well, if possible 50 yards away from all houses and then brick it up and cover up the top completely, putting in a hand pump through a small hole in the cover. All drinking-water should be taken from this well and no other. If a pump cannot be got, then a special bucket must be obtained and every day one man lets down and draws up the bucket with a rope and fills a large vessel or cistern full of water; this cistern has a tap from which each person can draw off drinking water as they want it. The bucket and rope should be kept for this purpose and no other. No persons should ever be allowed to wash them-

selves or their clothes near this well, and children, beggars and cattle are not permitted to make messes anywhere near the well.

TREATMENT OF CHOLERA CASES.—The sick people must be kept quiet, at rest and warm, by wrapping them in blankets; hot clothes and rubbing with turpentine may be applied to the stomach to relieve the pains. To relieve the thirst, water made pink with permanganate may be given in large quantities. Special pills of permanganate can be got at dispensaries to give to people with cholera. Other treatment can only be carried out by trained doctors and nurses.

PRECAUTIONS FOR ATTENDANTS.—The attendants on the sick must wash their hands whenever they are dirty in water made pink with permanganate crystals; and arrangements should be made for them to prepare their food at a distance from the sick, then after carefully washing themselves they can come and eat and afterwards go back to the sick people.

DISINFECTANTS.—Great care should be taken that all the stools and vomit of the sick people are each mixed with a handful of lime and then burnt in a fire. In this way the germs are all killed and cannot cause the disease in others. Soiled clothes must be destroyed in the same way by burning.

You will see that for prevention permanganate of potash crystals are necessary and if cholera occurs a messenger should be sent at once to the nearest dispensary to get some but until it comes all water should be boiled and the attendants must use boiled water to wash their hands.

Plague.

You all know what plague fever is, but you perhaps do not know what brings it into your village, how you can tell whether any one has got plague, what you can do to keep it away or what you can do to cure it when your friends get this fever. I will tell you now something about it.

Perhaps you have noticed that the plague fever always comes in the cold months and fewer or no people get it in the hot weather. Why is this? The doctor sahibs have been trying to find out the reason for this and they saw when visiting villages that at the beginning of the cold weather the rats which kept away from people's houses during the hot weather, began to come to the houses again and live in the roofs and walls. The rats came to the houses because they got plenty of food there and outside there was none. The doctor sahibs also saw that just before the plague fever began in a village many rats died in that village and so they thought that rats had something to do with the fever the people got. They say that the rats get plague fever and when they come to the houses bring fever with them. How do the rats bring the fever? Well! on the rats you may see little fleas which bite the skin of the rat and suck the blood. When the rats run about among the clothes and food in the houses and when they die in the houses the fleas leave them. When the people lie down in the houses the fleas get on them and bite them and suck their blood and at the time of biting put poison into the little wound. The people get the fever from the poison put into them by the fleas in this way.

You know there are many kinds of fever but in plague fever people always get a swelling in the groin or they get a bad cough and pain in the side and spit blood. From the swelling and bad fever you can say that a man has got plague fever.

To keep the fever away is the best thing to do. You must try to prevent the fleas from the rats biting you and to do that, you should try to prevent the rats from getting into your houses and from living in the roofs and walls and in clothes and among your bags of rice and grain. If you cannot do this very well, you should try to get all the rats in your village killed and it is no use killing rats in one house only but all the houses must be cleared at one time, for, if not,

the rats of other houses will come to the one that has been cleared and you will be no better off. You should also keep your village streets and the places round your houses very clean so that the rats will find nothing to eat there. If you would like it, the Apothecary will bring sulphur and burn it in your houses. This kills all the fleas and will be of use if you kill the rats at the same time.

When plague comes to a neighbouring village, you should not allow any one from that village to come to see you as they will bring the fleas on their clothes and leave them in your houses and when they bite you, you will also get the plague fever. If you want to go to see any of your friends when they get plague fever after you go back to your house you should take a bath and wash all your clothes and lay them out in the sun so that all the fleas that you may have got in your friend's house may be killed. If a man in your village gets what you think is plague fever, you should tell the doctor sahib at once and get him to come and help you to keep other people from getting it. All the people in the sick man's house should leave it and live in a hut out in the fields. The doctor sahibs have got a very good medicine to keep away plague fever and this medicine they put under the skin and if all the people in a village will have this done, plague fever will not come or if it does come, very few people will get it and nearly all that will get it will get better. It is best to get this medicine injected before the cold weather begins each year as it is in the cold weather most plague fever comes. There will be no pain when the medicine is injected but only a little fever for one day afterwards. The medicine will certainly do you no harm.

Regulation of Dairies and of the Sale and Transport of Dairy Produce.

The following rules made by the Municipal Board of Agra under Sections 128 (h) (i), 130 and 132 (1) of the United

Provinces Municipalities Act, 1900, have been confirmed by Government and published in the Government Gazette:—

1. In these rules—

(a) “dairy produce” means milk (whole and separated), butter, cream, curd, rabri, khoya, whey and ghi, excluding tinned butter and condensed milk imported from abroad or from recognized dairies outside the municipal limits;

(b) “dairy” means any premises in or on which—

(1) dairy produce is received, stored, made or exposed for sale after the European style;

(2) more than two milch cows or milch buffaloes are kept with the object of producing “dairy produce” for sale to the public either direct or through shops or agents;

(c) “licensing officer” means the health officer or such other officers as the board may from time to time appoint in this behalf.

2. No person shall open or maintain a dairy within municipal limits unless a licence granting permission to this effect has been obtained from the licensing officer.

3. The licensing officer shall before granting a licence inspect the premises intended to be used for the dairy, and shall either grant or refuse the licence, but if he refuses the licence, he shall at once report his reason in writing to the board.

4. The prescribed form for application for licence can be had free of charge from the municipal office.*

5. Licences shall be given in forms B 1 or B 2, as the case may be, and will be subject to the conditions printed

*NOTE.—Applications for licences for existing dairies must be made within one month of these rules coming into force.

Applications for fresh licences and for renewal of licences should reach the Municipal Health Officer, one month before the actual date from which the licence is required.

on the reverse of such licences, breach of which will entail forfeiture of licence.

6. On the outside of every licensed dairy the owner must affix and keep in a legible condition in some conspicuous place a sign-board giving the following details :—

1. Name of licensee.
2. Number of licence.
3. Number of cattle allowed.
4. Year for which licence granted.

Where the dairy is licensed under form B. 2, namely, as a place for selling milk, item no. 3 will be omitted from the sign-board.

7. Licences may be cancelled by the public health sub-committee if any of the following conditions, subject to which the licence is granted, are broken :—

(1) The premises shall be kept clean and in good order, and should have impervious flooring with a pakka drain, the latter connecting with a municipal drain or a pakka cesspool.

(2) Milking and storing utensils shall be kept clean and in good order.

(3) The licensee shall comply with any orders which the board may issue to him regarding the sanitary measures to be adopted for securing the proper cleansing of the dairy premises.

(4) The animals shall be fed on wholesome food, and shall be kept clean.

(5) The premises of the dairy and all apparatus used for the storage of milk, or for the manufacture of butter and cream, or for storage of the same shall be open to inspection by any officer duly authorized by the board in this behalf, and any recommendation which may be made by the health officer of the board shall be immediately attended to.

(6) No milk of any animal suffering from any disease shall be used for dairy produce.

(7) Every outbreak of disease among the cattle shall be immediately reported to the health officer, and such measures for the treatment or disposal of the sick animals shall be taken as may be directed by that officer.

(8) No person suffering from any contagious or infectious disease shall be employed at, or allowed to enter into, the dairy, or to sell dairy produce.

8. Any person whose application has been refused by the licensing officer under rule 3, or whose licence has been cancelled by the public health sub-committee under rule 7, may appeal to the board within 15 days of such refusal or cancellation.

9. The board's decision upon an appeal under rule 8 or on a report submitted by the licensing officer under rule 3, shall be final.

[*Under Section 132 (1)*]

10. In exercise of the powers conferred by section 132 (1) of the Act, the municipal board directs that any person committing a breach of rule 2 shall be punishable on conviction with a fine which may extend to fifty rupees, or in case of a continuing offence, with a further fine which may extend to five rupees for every day after the date of first conviction during which the offender is proved to have persisted in the offence.

Road Making.

Tar Macadam.

THE use of tar-macadam is not only being constantly extended in this country, but also on the continent, in America, India and our colonies. The interest taken in all that relates to its successful use may be seen in the numerous articles and papers dealing with this subject to be found in our columns. The Scottish experiments are almost wholly confined to experiments with various forms of tar-

macadam or pitch-grouting ; and the majority of the papers read at the Roads Congress at Cheltenham had reference to tar-macadam, or some other form of bituminous paving.

Although tar-macadam is recognised as one of the most useful road materials, there are still too many failures with it for highway engineers to use it with the confidence that they desire. Not only is there a difference of opinion with regard to the nature of the binder to be used, but an even greater difference of opinion with regard to what is the best stone or other material required for tar-macadam. While one surveyor swears by slag, another prefers granite and a third will only use limestone. That satisfactory roads have been made with tar-macadam of granite, slag and limestone, though with varying degrees of success so far as regards durability proves that it is the binder which is the chief factor in the success or failure of the finished roadway.

It is generally agreed that tar-macadam of limestone makes a good road for residential streets with light traffic, but for main roads with heavier traffic it is not sufficiently durable and is apt to become somewhat dusty in summer, and wears smooth and slippery. Slag, when carefully selected, and mixed with the care that is exercised by our large manufacturers has been very generally successful. On the other hand, much slag of a soft, sulphurous and honeycombed nature, has been sold, and has led to many failures. Granite, again, in many parts of the country has been most successfully used for the heaviest trafficked main roads ; and probably in almost as many cases has not been a success.

From this we may safely assume that it is not so much the stone as the binder or method of mixing that is at fault. Twenty or thirty years ago it was not uncommon to find tar-asphalted footpaths made with ashes, clinker, or pottery ; and some of these where there had been little traffic, when taken up with recent years, were found to be in almost as good a condition as when they were laid. The tar was as alive and viscous as when it was laid ; and yet in another length of the

same footway, made with the same materials, the tar had perished and the footpath become disintegrated with only a quarter of the life of the other. The care and experience in mixing is, again, a very important factor in the success of tar-macadam.

While makers of tarred slag and limestone have had many years' experience in mixing, granite quarry owners having had almost a monopoly in materials for ordinary macadam have only recently turned their attention to making tar-macadam. Again, a great part of the granite tar-macadam used up to the present has been mixed by surveyors in small districts with local gas works tar of constantly varying character; and the general use of rule-of-thumb methods of testing has not been conducive to success. With greater attention to the production of tar by our gas managers, and more scientific methods of testing by surveyors, great improvements in our tar-macadam roads may be looked for. The remedy lies, however, very largely in the hands of the large firms making granite tar-macadam, as they have a more durable and dustless material to deal with, which will be preferred by most surveyors for roads undergoing heavy traffic. They must, however, use a suitable tar as a binder and bring the same skill and care to the mixing as is now so generally done by the large firms making tarred slag and limestone, if they are to oust their formidable competitors.—*Surv.*

Cleaning Pavements without Sprinkling.

Three opinions expressed before the Annual Convention of the American Society of Municipal Improvements, at Boston.*

Dry Cleaning in Providence.

The fact that bituminous pavements laid in the City of Providence are not sprinkled with water is a subject that has occasioned frequent comments on the part of visitors to this city who are interested in the maintenance and cleaning of such pavements.

* Extracted from the *American City*.

I will say briefly that we are convinced that bituminous pavement maintained in good repair can be kept in a condition more satisfactory to all classes that travel the streets, both afoot and in vehicles, without, rather than with, using water for sprinkling.

We keep them clean by the patrol system, and reasonably free from dust. We believe that the use of water has an injurious effect upon the durability of the pavement. It emphasizes every slight depression and gathers and retains the fine particles that collect on a street, creating an unsightly appearance and a muddy, slippery condition. This results in the skidding of automobiles and a vast increase in the number of accidents.

By keeping the pavements free from water, we escape another prolific source of complaint. Upon the best of pavements there will be depressions sufficient to retain a thin sheet of water. The rubber tyres of the swiftly moving auto, and especially the auto truck, will act as a syringe and force the muddy water in a small stream upon the clothing of any one passing along the sidewalk, and even across the sidewalk, covering windows and buildings with muddy spots.

That more might be learned about the action of water as affecting the durability of bituminous pavements, it would be instructive to bring out the results of laboratory tests, and a comparison of the condition of streets laid about the same time, where water was used and where not. The whole question is a subject worthy of the earnest consideration of all officers that have charge of the maintenance of bituminous pavements. [Walter F. Slade, *Commissioner of Public Works.*]

Disadvantages of Sprinkling.

Fifteen years ago, when most of our street surfaces were macadam and dirt, and the comparatively few modern pavement surfaces were intercepted by macadam and dirt-roads, and traffic entirely horse drawn, the sprinkling of pavements to keep down the dirt was essential. Since then there has been a

rapid evolution until now much the greater percentage of traffic is motor-drawn with rubber tyres, which makes no dirt. The great majority of the pavement surfaces of our city streets now consist of some form of modern, nearly waterproof pavement. And still we follow the old antiquated custom of keeping the little dirt wet down with street sprinklers, providing a muddy, nasty surface which cannot be thoroughly cleaned and necessitating more sprinkling and more mud until the gutters become receptacles of mud.

We not only have the benefit of the seven years' experience of Providence, but we have our country roads for an object lesson. Recently I took a 250-mile automobile ride over the bituminous surfaced country roads of Massachusetts which have never been sprinkled and most of them never cleaned. There had been no rain for at least three weeks and I did not find a dirty road on the entire trip. A week before I had a similiar experience over 100 miles of bituminous road surface in Connecticut. This, notwithstanding that the county road surface is generally only 16 feet wide, with a similar width of dirt "shoulders" on either side, while our city streets are paved with a *naturally* clean surface from curb to curb. Why is this? It is simply because, without wetting down the dirt as fast as it forms and thus causing it to accumulate, as soon as imperceptible dirt particles form on the road surface, they are picked up by the natural wind and rapidly moving automobile and thrown aside and in such small quantities as to be imperceptible.

Another important point is that if bituminous pavement surfaces are dry and clean, the oil which drops from automobiles is quickly spread by the auto-tires to an extremely thin sheet. This not only preserves pavement surface, but the slight amount of oil takes up the fine dust and materially helps to prevent the pavement surface from ever becoming dusty. If the pavement surface is wet, those valuable effects of the slight dropping oil from automobiles are entirely lost.

Of course, in the case of city streets it is necessary, as Providence has done, to inaugurate a daily patrol system of street-cleaning to pick up the horse droppings before they can become converted into dust, and to work around the intersections of unpaved streets, if any. Some one or more of the systems of pneumatic cleaning machines, now in the process of development, will surely soon be a practical success ; but until then street-washing at night is necessary under some conditions, though not generally so. I believe that such a system of dry cleaning by hand patrol is less costly than the antiquated street-sprinkling, supplemented by the street sweeper trying to do the impossible—thoroughly pick up the accumulation of mud. Even if dry cleaning were not cheaper, its greater efficiency in keeping street surfaces in better condition for use by automobiles, horse and foot passengers, merits its adoption, to say nothing of the far greater durability of all forms of street pavement surfaces when dry, than when wet. It is generally conceded that water is the worst enemy of pavement surfaces. When the water is applied in the form of wetting down an accumulation of dirt subjected to steel-tired traffic we have the condition which from all ages, has been known to wear the hardest steel and is therefore used in the grindstone and for sawing stone, to wit, the application of mud under a grinding process.

I believe that repairs required to all classes of pavement are more generally the result of wetting down the dirt, leaving the surface in a continually more or less muddy condition, than by the traffic, or rather what would be the traffic under dry, cleanly conditions. A city or street in or on which sprinkling or other method of continual wetting of the pavement surface has not been practised is almost universally one where the pavements are the best of their kind, no matter what form of pavement construction is used. [George C. Warren.]

Dry and Wet Methods alternately.

Flushing machines and squeegees are now constructed which do effective work, but their adoption has been greatly retarded by the claims that the water has an adverse effect upon paving materials. Clifford Richardson, the asphalt expert, in his work on "The Modern Asphalt Pavement," says:

"In properly-constructed pavement no important deterioration from water action should ensue within the life of the pavement, and, as a matter of fact, in the author's experience, the deterioration of asphalt surfaces laid under his supervision has in the last ten years become an item which is hardly worth consideration, where the form of construction has provided satisfactory drainage."

As to the ill-effects of water on the joints of stone and block pavements, tests made some years ago in Detroit and Cleveland showed that such action was not necessarily adverse where good construction methods had been adopted. My judgment is that the paving engineer should design his exposed surfaces to resist water action for the great benefit to be derived from water cleansing. In flushing machines there is a distinct advantage in having an attached pump to express the water so as to get positive action continuously and on all the water which the storage tank may carry. A motor flushing machine has the advantage of carrying larger quantities of water with a consequent conservation of the time now lost in frequent filling of small tanks.

The machine squeegee or rubber scrubber is effective on smooth pavements where not too filthy, but the present method of delivery of water so close to the scrubber, renders the work imperfect through the ineffective action of the water on the filth before the scrubbing action is applied. This may be remedied by preceding the squeegee machines by a sprinkling cart, sufficiently in advance to give the water action full effect. And here let me say that that sprinkling wagon

should not be used, in my opinion, except as an adjunct to other cleansing devices, as by itself it is but a temporary makeshift and ineffective for good result. There is no reason for the filth removed by washing machines being deposited in sewer basins, but arrangements should be made for picking up the materials and carting them away as soon as they become sufficiently dry. Dry cleaning machines are greatly to be desired, and good progress is being made in the development of such. I know of two types of vacuum cleaners which are doing good work and need but little to make them practical and effective. These, of course, should be designed to pick up and place in receptacles the filth removed. When dry cleaning machine work is adopted, there must be periodical wet cleaning and such a combination should insure the best results.

My proposition, then, is: district your city and arrange for periodic machine work so that machine units may be changed from one district to the other, avoiding unnecessary duplication of plant; make combinations of machine cleaning adapted to different requirements; use dry and wet methods alternately as necessity demands; have patrol men work as litter gatherers where accumulations develop quickly which do not necessitate machine work; in congested districts or parts of districts do machine work at night and patrol work in the day-time; do not comply old men on patrol, put them on park work or other less strenuous duty; keep cost data but do not regulate your work by that, but by real efficiency; count cleansing necessities as items to be considered in the choice of pavements and on any type of pavement design to resist action of cleansing devices; and give serious and continuous study to the needs of this department of Municipal activity. So, may cleanliness be attained in city streets and health and comfort result. [Edward D. Very, *Sanitary Engineer*.]



Water Supply.

Chidambaram Water Supply Scheme.

THE town of Chidambaram is the head-quarters of the Chidambaram Taluk and contains a population of nearly 21,367 according to the last census. The temple here is one of the largest, most ancient and most sacred in all South India. The two important festivals being celebrated in the temple, one in June and the other in December every year, bring in as many as 60,000 to 80,000 pilgrims from all parts of India. The town is therefore one in which the pilgrim population bulks very largely.

The town itself lies on loose alluvial soil in the middle of wet cultivation and in a cramped site only two square miles in extent. The existing source of water-supply is from the usual polluted tanks and wells. The several diseases of this town have been traced to the bad and unwholesome water-supply. With the overcrowding of the pilgrims immediately after the annual festivals in Srirangam and Mayavaram on one side and Tiruvannamalai on the other they have a tendency to become intensified which they actually do. The successive Sanitary Commissioners have pointed out the urgent necessity of providing a protected and filtered water-supply for the town. Hence the question of introduction of a protected system of water-supply had been engaging the attention of the Municipal Council for the past quarter of a century.

In their Order No. 193 M. dated the 11th February 1911, Government sanctioned an estimate amounting to Rs. 3,97,650 for a water-supply scheme for execution by the Public Works Department. As the salient features of the scheme had been approved by the Sanitary Commissioner, Sir Arthur Lawley, the then Governor of Madras, in anticipation of the publication of the formal sanction of the scheme, laid the foundation stone of the service reservoir on the 8th February 1911, and the waterworks have been, with permission, named after him as "Lawley Water works."

The construction of the works was completed and the works were inaugurated by His Excellency Lord Pentland on the 23rd February, 1915. The following report gives the main features of the scheme.

Some fifteen years ago the Sanitary Engineer reported on the sources of water-supply for the town of Chidambaram and a scheme was prepared in detail with the Raja Vaikal irrigation channel as the source. This scheme was disapproved by the Chief Engineer, Col. Macneil Campbell, although he recommended the retention of Raja Vaikal as the source of supply. A second source of possible supply, viz., the Lalpuram Spring area, was proposed and an estimate for its investigation was submitted. The question of water-supply then appears to have been held in abeyance for some years until the Hon. Mr. S. Rm. Ramaswami Chettyar came forward with an offer to bear part of the cost of the investigation. The acting Sanitary Commissioner, Major Clemesha then inspected Chidambaram and reported against the Lalpuram proposal owing to the fineness of the sand pointing to the probability of insufficient supply. Major Clemesha recommended the Raja Vaikal as the source with a storage tank on its bank and the provision of mechanical filters.

In G. O. No. 540 M. dated 1st April 1910, Mr. Hutton, the Sanitary Engineer, was requested by Government to draw up the scheme as recommended by Major Clemesha. At the same time his attention was called to the fact that the town of Chidambaram was a poor one and that the scheme should be worked out on the cheapest lines compatible with efficiency.

GENERAL DESCRIPTION OF THE SCHEME AS CARRIED OUT.—At a point on the left bank of the Raja Vaikal channel, about $3\frac{1}{4}$ miles from the centre of the town, an off-take is constructed and water is conveyed through a short length of new channel into a storage tank consisting of two compartments with a storage capacity of $3\frac{1}{2}$ months supply plus an allowance for evaporation and absorption. From the storage

tank, water is drawn off by an outlet into a suction well whence it is forced through two mechanical filters and a steel pumping main to an elevated service reservoir located on the highest point of the town. From this reservoir water will be distributed by pipes and fountains erected in important centres. The Raja Vaikal irrigation channel takes off from the left bank of the lower anicut on the Coleroon and after flowing for 24 miles arrives at the site of storage tank. At the site of the off-take of the storage tank there is a masonry drop in the channel. The bed level of the channel on the upstream side of the drop is 15.62.

INLETS INTO STORAGE TANK.—Each of the compartments is provided with a 12-inch sluice valve inlet so that either may be isolated and kept linked while the other is being cleaned of silt. At the first inlet site there is placed a small sluice to divert the water into the inlet and to cut off connection from the continuation of the channel which would be seldom used and would therefore contain as a rule stagnant water. The out-let end of the inlet is levelled to avoid scouring and disturbance of the clay bed of the tank.

STORAGE TANK.—The storage tank is designed with two compartments, each about 1,650 feet in length and 300 feet in width. The capacity of the tank has been fixed at $3\frac{1}{2}$ months storage which is considered ample. The south compartment or the one into which the channel water will usually first enter is made deeper so as to allow for deposit and settlement of silt, of the channel water during its long passage of 1,650 feet through the compartment. The bed of the north compartment is one foot higher for two reasons, one being the less necessity for the deepening and the other being the saving in cost. The tank will fill usually by gravitation up to level 17.00 or 3 feet above the lowest draw-off level which is at 14.00. From the level 17.00 to the full supply level 24.00 the tank will be filled by a centrifugal pumping plant located in a room adjoining the main Engine house. The site of the tank is partly an old and small tank and partly paddy fields.

The soil is principally clay and makes excellent material for forming bunds. The tank has been purposely made much longer in length than in breadth to allow for silting and screening action during flow of water through it and also in order to avoid interference with an important field channel on the north of the storage tank.

POPULATION AND QUANTITY OF WATER.—The population of Chidambaram has varied from 15,519 in 1871 to 19,837 in 1881, 19,909 in 1901 and 21,327 in 1911. The population in 1941 is expected to be 25,000 and in addition to this number, provision is made for an assumed floating population of 5,000 thus making a total population of 30,000. The quantity of water to be supplied has been fixed at 15 gallons per head or a total demand in 1941 of 450,000 gallons daily or 313 gallons per minute per 24 hours daily.

PUMPING STATION.—The pumping station is located to the west of the storage tank. Water is led from a floating outlet to a suction well 8 feet in diameter whence it will be pumped by means of horizontal compound direct acting steam pumps through mechanical filters and thence through a 10-inch steel main to the town. The engine room measures 28' \times 18' and the boiler space 24' \times 18'. To the right of the main engine house, there will be a subsidiary engine room containing a compound centrifugal engine for filling up the storage tank prior to closure. A store-room and workshop are attached to the main engine house.

FILTERS.—From the pump well, the water is forced through Patterson mechanical filters which are capable of dealing with the supply required for the town. Allowance has been made for an increased head on the pumps of 20 feet.

A design was made for a coagulating tank but it has not been considered necessary to construct it as the water, owing to the arrangement of the long settling tanks, will have to travel through the tanks exposed to the sun and air for the long distance of 3,300 feet before reaching the mechanical

filters. The fine quartz sand of the filters will sufficiently filter the water in order to remove any floating and other matter which may reach them. If any coagulant is required during times of turbidity in the channel, it will suffice, it is thought, to add a small quantity of sulphate of alumina at the inlet to the first tank. This addition will accelerate the deposition of salt in the water during such times as the channel water is changed with it.

VENTURI METER.—On the rising main from the filters a venturi meter is provided for accurately measuring the quantity of water pumped to the town.

PUMPING MAIN.—The pumping main from the head works to the service reservoir in the town is a 10" steel pipe. Scour valves and air valves are provided at suitable points on distribution mains.

SERVICE RESERVOIR.—The site for this reservoir was selected in west car street at the space belonging to the Municipality. The foundations of the reservoir have been fixed at a depth of 13 feet which has unfortunately added to the cost. The reservoir is designed to have two compartments, each measuring 46'-9" and 36'-8". The central pillars of the reservoir is constructed of coursed rubble, also part of each arch, the remaining part being brick in cement. The walls of the reservoir are of coursed rubble up to plinth level from two feet below ground. The remainder of the masonry above ground is of brick in mortar, as the bricks at Chidambaram have a good reputation.

The floor of the reservoir is made of concrete plastered with half-inch cement plaster on which is placed malthoid.

RESERVOIR LINING.—On the lining, there is a one inch thick cement plastering and then a layer of white glazed tiles. The walls are also treated with malthoid lining and white glazed tiles. The reservoir roof is made of jack and terracing and two ventilators are provided for each compartment.

DISTRIBUTION.—The length of the larger sizes of the distribution pipes being small, they have been provided as cast-iron pipes. Fountains have been provided in the town.

GENERAL.—The works have cost Rs. 3,97,650. The execution of the scheme which has now been brought to a successful termination was largely assisted by the interest taken in it, by Diwan Bahadur S. Rm. Ramasawmy Chettiar who has given a generous contribution of Rs. 1,32,500 towards the cost of the works. Government were pleased to make a free grant of Rs. 2,30,656. The balance of cost was found from municipal revenues (Rs. 22,800) and from private subscriptions (Rs. 11,700).

The plans and estimates for this scheme were drawn up, as previously stated, by Mr. W. Hutton, Sanitary Engineer to the Government of Madras. The scheme has been well conceived and has been drawn with commendable interest and skill by Mr. W. Hutton.

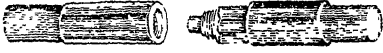
The works have been very carefully carried out by the local officers of the Public Works Department. M. R. Ry. Rao Sahib L. A. Rangaswami Aiyar Avergal, the Honorary Assistant Engineer has been in direct charge of the work for the whole period and has taken a keen interest in carrying out the work in a workmanlike and thorough-going manner under the supervision of the Executive Engineer, M. R. Ry. Arogyaswamy Mudaliar Avergal.

To the permanent residents of the town of Chidambaram and to the very large pilgrim population who resort to this town, a filtered water supply delivered under pressure has thus been introduced. It is hoped that of the manifold benefits accruing from this protected water supply, some of the diseases will disappear from the town for ever and it will be a source of good not only to vast humanity but also to mute creation.



Drainage and Sewage Disposal.

Locking Joint for Drain Clearing Rods.

THE old-established firm of H. Hart, 29, Settles Street, Commercial Road, London, E., have patented a *locking joint for drain-clearing rods*, which is illustrated herewith. This is known as the patent swivel collar locking joint. It is exceedingly simple and strong in construction, there being nothing to get out of order, no pins or springs being used, and there are no projections or spaces *Illustrated* where dirt can collect. The hexagon collar  ensures easy working, the locking being accomplished by the square head engaging in a slot in the ferrule. We understand these have been supplied to many Surveyors of public bodies and repeat orders obtained for them, which may be accepted as a proof of their good qualities. The firm also manufactures rods fitted with the ordinary interchangeable joints and various tools and brushes for connecting to them, as well as expanding drain stoppers, drain testing machines, and chimney sweeping sets—*Sur.*

An Engine Driven by Sewer Gas.

Of late years public opinion has become much more sensitive regarding the disposal of town sewage, while the laws relating to the pollution of rivers and streams, which have been made more stringent, are now rigidly enforced, the result being that every inland town is saddled with a heavy annual charge for purification works. Under such conditions it is only natural that all possible efforts should be made to lessen the expense either by improved processes or by exacting by-products which can be sold for manure and other purposes. The latest purification system is simple and effective—hence no great economy can be expected from future improvements in this direction; and as regards the manufacture of manure, only a small number of

towns have been able to produce saleable products, the disposal of sewage being a dead loss to the majority of municipalities. Any invention or discovery, therefore, whereby this loss can be minimised should be welcome, and one of the most promising ideas is to use the gas given off by the sewage for driving gas-engines. Almost every purification scheme includes what are known as septic tanks, where the sewage is allowed to settle for many hours, the liquid being drawn off at the top, while the solids which sink are extracted from the bottom. During this settling process gas is generated, which rises to the surface in bubbles, and it has been found practicable to use this gas in a gas-engine, although it is not suitable for lighting purposes. The gases given off from septic tanks are very offensive, and any treatment for rendering them harmless would be welcomed for its own sake; hence an invention which actually makes money out of the process at the same time has a doubly beneficial effect. . Septic tanks at present are usually open, and they account to a large extent for the noxious smells emanating from sewage-works. Where this invention is applied, the tanks will be air tight, with no outlet for the gases except through the engine. The first town to give a practical trial to this new method is Parrametta, in Australia, where an engine of sixteen horse-power is worked entirely by gas from the septic tanks. This engine drives a pump which raises the sewage some thirty-five feet, a work previously performed by steam-engines, for which coal had to be bought. Furthermore, the supply of gas is so regular and certain that the engine can be left running all night without attention, thus effecting a saving in wages and fuel which will pay for the new engine in about five months. According to the inventor, Mr. Walshaw, this system should yield about one hundred and fifty horse-power in a town of ten thousand inhabitants, or enough, if used for producing electricity, to supply light for the whole town. Again, many large country houses have their own sewage-disposal works, and the gas generated therefrom should give sufficient power

for lighting the house, while removing a source of offensive smells—*Cham. Jour.*

Town Planning.

Town Planning in Madras.

THE advent of Prof. Geddes has not been in vain; everywhere people are talking of town planning, town extensions and village extensions. We trust, with Mr. Molony, the President of the Corporation of Madras, that this *talking* will lead to *doing* and that in the near future. In the order, recently issued by the Madras Government (printed at p. 290) we see the whole influence of Prof. Geddes' lectures at work. His Excellency Lord Pentland has interested himself in the housing question so far as it concerns the lower classes, and he has invited practical suggestions. His Excellency has suggested that the Corporation of Madras should invite designs for houses (1) for a man earning Rs. 10 to Rs. 15 per mensem, (2) for a man earning Rs. 20 to Rs. 30 per mensem and for (3) a man earning about Rs. 40 per mensem; also a design for laying out a plot of ground with such houses. The houses must conform to certain conditions: they must be economically possible, i.e., the cost must be such that it will pay private landowners to build them; and they must be built on sanitary lines.

Owing to the peculiar conditions of this country, practical designing is beset with considerable difficulties. In addition to the abstract, economic and sanitary requirements, there are other considerations which the designer has to take into account. There is first the caste and social question. The practical solution of the question, will persons of different social positions and of different castes agree to live close to one another? is indeed a difficult one. Further, the design for a Brahman house may not quite be the same as a Sudra house. The design will have to suit every taste. We trust that the practical interest evinced by His Excellency Lord Pentland will stimulate co-operation on the part of Municipal Councillors and the public generally.

The Art of Town Planning.

Mr. Raymond Unwin having resigned his lectureship in town-planning at the Birmingham University on taking up the appointment of H. M. Chief Inspector and technical adviser in town-planning to the Local Government Board, his place has been taken by his partner, Mr. Barry Parker, who recently delivered two lectures at the Suffolk Street Technical School. Mr. Parker gave an outline of architectural history such as is essential to any understanding of the art of town-planning. He showed that the main points the town-planner had to grasp were that the town-planning of the ancients was always on monumental and formal lines, that in mediæval times town plans had always been influenced largely by considerations of defence, that with the renaissance in architecture and the other arts the idea of the formal lay out of towns was revived, and that therefore in renaissance times town-planning was always done with a view to secure architectural effects. In conclusion, he claimed that town-planners of the future were free to approach, and should approach, the subject from every possible point of view. Though being less influenced by considerations of defence these considerations had some weight, as exemplified by the fact that Napoleonic streets had been laid out straight to enable Napoleon's gunners, when placed at the end of one, to clear it of an enemy, and by the fact that German railways are seldom carried right through a town, but almost always past them at some little distance away in order that in the event of the town being taken by the enemy that enemy might not be in possession of the lines of communication between one part of the country and another. He said the town-planner of the future should grasp from the outset the artistic possibilities his problem presented, while not losing sight of any practical consideration, such as economic road construction and the avoidance of cutting and banking in the making of roads, and the provision of a simple, inexpensive, and effective drainage system. The successful town-planner of the future would be the man who could approach his work with the least definite

bias or predilection towards any given type or form of plan, the man who could, with the most open mind, let the requirements and conditions laid down suggest to him a natural solution. It seemed a large claim to make for the new English school of town-planners, but he thought it could be justly claimed that to them belonged the conception that a town-plan could be made with a view to securing the pleasantest possible place in which to live. He contended that a study of town-planning in the past would lead us to conclude that, except to a modified extent in the middle ages, this idea had never been a controlling one—that towns had been planned to be imposing and impressive, to secure strategical advantages, to facilitate traffic, to secure conveniently-shaped building plots, to provide sites on which important buildings might show to advantage, and with a hundred and one other objects in view; but never with intent to secure the pleasantest possible places in which to live. If town-planning in the future were to mean all this, everything depended on the completeness of the civic survey made before the town-plan itself was started upon. The survey must include to contouring the whole site, complete archæological, geographical, meteorological, historical and public health surveys, presented in graphic form, together with graphic plans showing density of population in the different parts of the area, and diagrams giving all traffic conditions and means of transit. He emphasised the importance of the town-planner having before him when preparing his plan a collection of old plans showing the development of the town in the past that they might glean from them indications of the probable natural courses of its development in the future.



Government Orders & Notifications.

[United Provinces.]

MEDICAL HEALTH OFFICERS. — The Local Government, in exercise of the powers conferred by Section 187 of the United Provinces Municipalities Act, 1900, has made the following rules under the said Act, regarding the appointment and duties of health officers in places not employing a provincial service officer :

1. The Civil Surgeon or other principal medical officer of each district shall be the medical officer of health of every municipal board in the district not employing a provincial service health officer. In the Municipalities of Roorkee and Almora, the officer in civil medical charge shall be the board's medical officer of health.

2. It shall be the duty of the medical officer of health—

(a) to attend the meetings of the board as often as may be, and whenever he is directed by the District Magistrate to do so ;

(b) of his own motion or by direction of the District Magistrate, to inspect any place and report to the board having authority over it as to the sanitary condition of the place and as to the measures, if any, that should in his opinion be taken to render the place less noxious to the public health ;

(c) to advise the board as to its sanitary rules ; and

(d) to bring to the notice of the board defects in its sanitary arrangements.

3. The board shall forward to its medical officer of health, within one month from the date on which the rule takes effect, a copy of every rule made by it—

(i) for prohibiting or preventing any act or omission on the ground of its being prejudicial to the public health ; or

(ii) for controlling and regulating the use and management of any burning or burial ground ; or

(iii) for providing for the proper registration of births, marriages and deaths.

ELECTRIC SUPPLY FOR AGRA.—In exercise of the powers conferred by Section 3 (1) of the Indian Electricity Act, 1910, His Honour the Lieutenant-Governor of the United Provinces has been pleased to sanction a license under the aforesaid Act being granted to Messrs. Crompton & Co., Ltd., for the general supply of electrical energy to the public within the Cantonment and Municipal limits of Agra.

A NEW PUBLIC FERRY.—The United Provinces Government have, in exercise of the power conferred by Clause (c) of Section 4 of the Northern India Ferries Act, 1878, established, with effect from the 1st October 1915, a new public ferry on the Ganges at Village Lahangi, in the Fatehpur district. The ferry will be managed by the Fatehpur District Board and the proceeds from the ferry will be paid into the District Board funds of that district. [Notification No. 143-IX—24, dated 18-2-1915.]

[Punjab.]

SANCTION FOR SANITARY WORKS.—The following draft rules, which the Lieutenant-Governor proposes to make under the provisions of Section 240 (1) (b) of Act III of 1911 (The Punjab Municipal Act), in supersession of the present Rule III C published in Punjab Government Notification No. 1017, dated the 10th August 1901, as amended by Punjab Government Notification No. 79, dated the 16th January 1908, are published for general information :—

(1) No original sanitary work involving an expenditure of Rs. 1,00,000 or upwards shall be undertaken until the administrative sanction of the Punjab Government (which will be conveyed by the Civil Department) shall have been obtained

(2) No original sanitary work involving an expenditure of Rs. 10,000 or upwards (but less than Rs. 1,00,000) shall be undertaken until the administrative sanction of the Sanitary Board shall have been obtained.

(3) No original work, other than a sanitary work, involving an expenditure of Rs. 10,000 or upwards, shall be undertaken until

the administrative sanction of the Local Government (which will be conveyed by the Civil Department) shall have been obtained.

(4) No original work of any kind involving an expenditure of (a) Rs. 5,000 or upwards (but less than Rs. 10,000) when the Municipality is of the 1st class, or (b) Rs. 2,000 or upwards (but less than Rs. 10,000) when the Municipality is of the 2nd class, shall be undertaken until the administrative sanction of the Commissioner shall have been obtained.

The following draft rules, which the Lieutenant-Governor proposes to make under the provisions of Section 55 (2) (0) of Act XX of 1883, (The Punjab District Boards Act), in supersession of the present Rule IIIB, published in Punjab Government Notification No. 1016, dated the 10th August 1901, as amended by Punjab Government Notification No. 78, dated the 16th January 1908, are published for general information :—

(1) No original sanitary work involving an expenditure of Rs. 1,00,000 or upwards shall be undertaken until the administrative sanction of the Punjab Government (which will be conveyed by the Civil Department) shall have been obtained.

(2) No original sanitary work involving an expenditure of Rs. 10,000 or upwards (but less than Rs. 1,00,000) shall be undertaken until the administrative sanction of the Sanitary Board shall have been obtained.

(3) No original work, other than a sanitary work, involving an expenditure of Rs. 10,000 or upwards shall be undertaken until the administrative sanction of the Local Government (which will be conveyed by the Civil Department) shall have been obtained.

(4) No original work of any kind involving an expenditure of (a) Rs. 5,000 or upwards (but less than Rs. 10,000) when the district board is of the 1st class, or (b) Rs. 2,000 or upwards (but less than Rs. 10,000) when the district board is of the 2nd class, shall be undertaken until the administrative sanction of the Commissioner shall have been obtained.

[Bihar and Orissa.]

NEW UNIONS IN BIHAR AND ORISSA.—In exercise of the powers conferred by Section 38 of the Bengal Local Self-

Government Act, III of 1885, the Lieutenant-Governor in Council has been pleased to constitute the Chinpur and Koath Villages in the District of Shahabad, into Unions with effect from the 1st March, 1915. As, however, the Unions are not ripe for an elective system of membership, the Committees of the Unions will consist of members appointed by the Commissioner of the Patna Division.

LEVY OF ROAD CESS.—In pursuance of Section 154 of the Cess Act, 1880 (Bengal Act IX of 1880), the Lieutenant-Governor in Council has notified that the District Road Committee of the Santal Parganas have determined to levy road cess for the cess year commencing from the 1st April, 1915 at the maximum rate of six pies or two pies on each rupee of the annual value of lands and on the annual net profits from other immoveable property assessed under the Act. [No. 2136 M. dated 13-2-15].

[Bombay.]

TUBERCULOSIS HOSPITALS AND DISPENSARIES.—In paragraph 3 of his annual report on civil hospitals and dispensaries in the Bombay Presidency for the year 1911, the Surgeon General first brought to the notice of Government the need in the City of Bombay of a hospital for the treatment of tuberculosis cases. In paragraph 14 of his report for the year 1912, he expressed the hope that hospitals for the exclusive treatment of tuberculosis would soon be provided by the larger municipalities of the Presidency. In paragraphs 7, 20, 21 and 22 of his triennial report for 1911-13, he urged the necessity of establishing special wards in existing hospitals and special dispensaries for the reception of cases of tuberculosis. In paragraph 3 of their Resolution on the last-named report, Government concurred in the view expressed by the Surgeon General and asked him to submit detailed proposals for the provision of special medical relief for tuberculosis cases in the Bombay Presidency. These proposals have now been received and Government are pleased to pass the following orders with regard to the several suggestions made by that officer.

2. In order to give effect to the measures which he considers necessary for the reduction of the prevalence of the disease and the treatment of cases, the Surgeon-General offers the following remarks and suggestions :—

(a) the most effective method of dealing with the problem of preventing the spread of tuberculosis is by the establishment of tuberculosis dispensaries in towns and the provision of special wards for advanced cases of pulmonary consumption at civil hospitals ;

(b) the places in which resort to these measures can most suitably be undertaken are those already selected for their operations by the King George V Anti-Tuberculosis League, *viz.*, Bombay, Ahmedabad, Surat, Poona, Sholapur, Karachi and Hyderabad ;

(c) the establishment of tuberculosis wards in civil hospitals affords the most direct and practical form of relief for the very poor, among whom the disease is most prevalent, as in hospital they receive food, treatment and nursing free. The special advantages of this form of relief are to be found not only in its directly beneficial effect on the patients themselves but also in its action in the interests of the general population among whom the cases thus segregated would otherwise act as so many centres of infection ;

(d) in Karachi 16 beds and in Ahmedabad and Hyderabad 10 beds each are required for tuberculous cases in connection with the local civil hospitals. In Surat, the special accommodation required will be available when a new out-patients' department has been built and the present out-patients' dispensary and office are consequently removed from the hospital wards which they now occupy. The civil hospitals at Poona and Belgaum already contain special wards for the treatment of tuberculous patients, and similar accommodation is being provided in the new civil hospital which is under construction at Sholapur ;

(e) the expenditure required to provide a tuberculosis ward at a civil hospital when no site has to be specially acquired for the purpose is approximately.—

(i) building, Rs. 400 per bed.

(ii) original outfit, Rs. 225 per bed, and

(iii) recurring expenditure, Rs. 36 per bed :

(f) tuberculosis dispensaries should be located as centrally as possible in the towns so as to be close to the homes of the patients attending them ;

(g) the staff of a tuberculosis dispensary should consist of—

(i) a medical officer who is an expert in the diagnosis of early tubercular disease and is acquainted with the method of tuberculin inoculation and its value in treatment; he should be a wholetime officer so as to be able to visit a certain proportion of his patients at their own homes and have time for examining sputa, etc., for tubercle as a matter of routine diagnosis ;

(ii) a nurse to assist at the dispensary and visit patients in their homes as a health visitor ;

(iii) a compounder to dispense medicines,

(iv) a hamal, and

(v) a peon ;

(h) the dispensary should consist of separate waiting and dressing rooms for men and women, a consulting room, an office, a dispensary room, a nurse's room and a laboratory. It would generally be possible to rent a house in the town affording the accommodation required. One dispensary would be sufficient for a town of 100,000 inhabitants ;

(i) the approximate cost per month of the upkeep of a tuberculosis dispensary would be as follows :—

				Rs.
House-rent	..	...	...	40
Furniture	...	...	...	20
One medical officer		...	...	250

				Rs.
One nurse	...	..	...	125
One compounder	...	...	...	25
One hamal	...	...	...	12
One peon	...	...	...	10
Drugs	...	...	...	50
Total				532

The Governor in Council is pleased to express general approval of the foregoing suggestions and to pass the following orders with regard to certain further recommendations made by the Surgeon General.

3. In order to spread the knowledge of the infectiousness of the disease and of the probability of its cure when it is treated in its early stages, the Surgeon General recommends—

(a) that special instruction in the subject should be given to school teachers and children, and

(b) that sanitary knowledge should be spread by the agency of nurses, sanitary instructors and health visitors.

With regard to (a) the Surgeon General's attention should be invited to Government Resolution, Educational Department, No. 2939, dated the 13th October, 1913, from which it will be seen that steps have already been taken by Government with a view to instruction being given to school teachers and children regarding the dangers of tuberculosis and the general precautions to be observed. Suggestion (b) is approved and the Surgeon General should be requested to submit proposals, in consultation with the Sanitary Commissioner, for giving effect to it so far as may be possible.

4. With regard to Bombay City, the Surgeon General considers that each of the large Indian hospitals should have attached to it special tuberculosis wards and observes as follows :—

(a) at the J. J. Hospital, wards accommodating a total of 20 beds will be made available when the new bacteriological and biological laboratories have been built,

(b) the Gokuldas Tejpal Hospital has no suitable accommodation, nor is a site available on which to build wards unless more ground can be acquired,

(c) the Cama and Albless Hospitals require 12 beds for tuberculous patients.

The proposals made by the Surgeon General for the provision of special accommodation for tuberculous patients at the J. J. and Cama Hospitals are approved. The provision of similar facilities at the Gokuldas Tejpal Hospital cannot be considered for the present.

5. The Surgeon General further suggests that when the proposed King Edward Memorial Hospital is built, accommodation should be provided in it for patients in the advanced stages of pulmonary tuberculosis. The Corporation should be requested to consider the advisability of reserving accommodation in the hospital for at least 15 beds for tuberculous patients.

6. With regard to the mofussil, the Surgeon General suggests that in every suitable centre a tuberculosis dispensary should, if possible, be established which would be financed and controlled by the local municipality. Where the municipality is unable to bear the entire expense of the dispensary, he considers that a grant-in-aid might, as in the case of ordinary medical dispensaries, be given towards its recurring expenditure, in addition to any initial grant which it may be decided to allot. Collectors should be requested to bring to the notice of the larger municipalities in their respective charges the Surgeon General's present suggestions and in due course to communicate the result to Government through Commissioners and the Surgeon General together with a statement of the estimated recurring and non-recurring expenditure involved and of the extent to which grants will be required from Government. The dispensaries will be managed by special local committees appointed by municipalities, but

in cases in which Government contribute to their funds, the latter would be entitled to representation on those bodies.

7 The Surgeon General also recommends that the co-operation and advice of the King George V Anti-Tuberculosis League, Bombay, should, as far as possible, be obtained by municipalities for any measures which they may decide to undertake, as the League is in a position to afford material assistance by supplying information, lending diagrams for the instruction of classes and furnishing sample leaflets for printing and distribution, and in many other ways. The Surgeon General's suggestion is approved. A copy of this Resolution should be forwarded to the Anti-Tuberculosis League for information and necessary action, with an expression of the hope that they will co-operate in this direction with Government with a view to ensuring the success of the measures to be undertaken.

8. The Surgeon General should be requested to forward the plans and estimates of the wards required in connection with the existing Government hospitals to the Public Works Department (*vide* paragraph 4 above)

9. In the foregoing paragraphs Government have recorded their views regarding the various proposals made by the Surgeon General. Having regard, however, to the orders contained in Government Resolution, Financial Department, No. 4427, dated the 24th October, 1914, it will not be possible for Government to give any contributions until the financial situation is more favourable. But this should not be regarded as a reason for deferring the formulation of definite proposals which can be brought into operation when the present difficulties disappear.

10. This Resolution should be placed on the Editors' Table and communicated to the editors of newspapers and should be published in the Supplement to the *Bombay Government Gazette*. [No. 1419 A, dated 17-2-15].

[Madras.]

VILLAGE EXTENSIONS.—The many difficult problems connected with congestion in municipalities which now face municipal councils and will cost large sums to solve would obviously in most cases never have arisen if the growth of the municipalities had been watched and properly directed from the time they were small villages. Yet little is being done at present to control or direct the expansion of growing villages and these are in too many cases spreading in a confused and disorderly manner which will eventually need to be remedied at heavy expense. Houses (often costing considerable sums) are springing up, facing in every direction and so constructed that neither streets in front of them nor conservancy lanes behind them are possible; no provision is made for through roads connecting with existing thoroughfares; no ground is left for wells or latrines or open spaces for recreation; no account is taken of the existing or natural features of the site or of the possibility of a picturesque lay-out and the result, too often, is an extension which is inconvenient and unhealthy to those who live in it, ugly in itself and a hindrance to through traffic to the parent village.

2. The Government accordingly consider that in all cases where villages and non-municipal towns are rapidly increasing in size, it should be held to be part of the duty of the local board concerned to do what is possible to prevent the extensions from becoming unhealthy, inconvenient or ugly, and that the chief step necessary is to provide land for the extensions, lay this out into building plots divided by main and minor roads, and set aside sites for wells, latrines, open spaces and so forth.

3. Where land at the disposal of Government is available, the Collector should be moved to make it available for building purposes under Board's Standing Order 21 (1) and 10 (viii), the local body arranging the plotting and lay-out but assuming no other control over the land. Where such a course is not possible, the local body should apply to the Collector under

Board's Standing Order 24, clause (13), for an assignment of Government land or the acquisition of private land. The land thus obtained should be plotted into sites, provided with such roads as funds permit and sold again in auction, plot by plot, to those in need of house-sites at an upset price sufficient to repay the local body the expenses of the acquisition and of making the roads.

4. It is clear that this latter course involves the risk that the local body may purchase land which it will be unable to resell (this has already happened in more than one instance) and the proceeding requires therefore to be conducted with care and a consideration of all the local circumstances; but in more than one district it has already succeeded amply, the profit on resale enabling the local body to provide good roads, avenues and other amenities. The Government accordingly desire to see the system more widely tried. Special subcommittees of the local boards concerned might usually with advantage be appointed to make the necessary preliminary enquiries.

5. It is obviously essential first to make sure that the site is healthy. If possible it should be open to the prevailing winds, on high ground, with a gravelly or rocky (rather than a clay) soil and a low level of sub-soil water. Next it must be ensured that the plots will be taken up in sufficient numbers if the land is acquired and careful local enquiries on this point must be made. The land once acquired, it remains to lay it out. The Government do not desire to prescribe any rigid rules on this matter, but there are certain general principles which should usually be followed. Roads which will connect with other main thoroughfares should be not less than 50 feet wide, as no narrower width will permit of avenues being planted. Major roads may be 40 feet, minor roads 30 feet and conservancy lanes 10 feet wide, these measurements in all cases excluding the side drains. A good general size for houses is 45 feet—60 feet, but often the demand for them will proceed from various classes of varying prosperity and it may then be

found best to arrange for some smaller and some larger than this, the larger ones being laid out facing the wider roads. Not more than one house should be built on each plot. Back to back houses should be prohibited and the back of every plot should open on to a conservancy lane or minor street so that even though conservancy carts and drains may not be at the moment in existence, their use in future years may not be rendered impossible by a faulty lay-out. House drains should be made to run to the back of the house rather than into the main street in front of it, as is too often now the case. Sites should be reserved for future latrines in unobtrusive corners and for wells in places, if possible, where they may form a feature of the extension and be surrounded with an open square or a few trees. Open spaces for public gardens and the like may be reserved. Though streets may usually run at right angles to one another, it is not necessary to adhere rigorously to the "grid iron" plan of lay-out nor to knock down buildings which prevent a road from being run perfectly straight, while advantage should be taken of natural or existing features, such as a river, a bathing tank, a temple, a tree surrounded by its platform or snake-shrines and so forth, to give such picturesque-ness as is possible to the new extension. It is also necessary to consider all the surroundings of the site and make the lay-out fit in with these; a main road, for example, which runs up to the extension should be extended through it and not blocked or narrowed to a lane. It is necessary to endeavour to foresee what the requirements of the extension are likely to be in fifty years' time and to plan accordingly.

6. Where the local body cannot afford the money for the purchase of the extension, it may apply to the Government for a loan of the amount subject to its repayment in twenty years with interest at 4 per cent. Every endeavour may be made to cheapen the first cost of these extensions. Thus, there is no need to construct at the outset the whole of the roads they will eventually require; it will be sufficient in most cases to demarkate these and the various house-sites with stones, or in

some other durable manner, and to metal only the centre 12 feet of the main roads. In this way the cost of sites to purchasers may be kept within reasonable limits and improvements left to be effected later when the extension is included within a union or municipality and revenue from it can be raised for expenditure upon it. Similarly, the use of the extension need not be discouraged by any insistence on a high standard of building such, for instance, as the prohibition of thatch. Where a thatched house is put up, care should be taken to see that a sufficient amount of space is left all round in the plot to secure the isolation of the house from the adjacent houses. If the extension eventually becomes popular, the standard of building within it will rise automatically. At the same time, any efforts of the people themselves to improve the extension, as by the planting of trees in avenues or round wells, should, of course, be encouraged.

7. Sites in extensions will usually be best disposed of by public auction and subject to no uncertainty of tenure or charges. Payment by instalments may be permitted at a slight increase on the auction price. It is not necessary to insist on the plots being sold in the order of their situation on the ground, nor to prevent anybody from purchasing more plots than one; to do so might prevent members of the same family from living close to one another. But precautions are necessary to prevent purchase merely as speculations in the expectation of a rise in values; and where this is suspected, the sale-deed should contain a condition that a house must be built upon the plot purchased within (say) two years, the penalty for failure (in the absence of sufficient excuse) to comply with the condition being the resumption of the land by the local body subject to the refund to the purchaser of the price he paid less 10 per cent. [G. O. No. 239 L. dated 16-2-15].

GRANTS TO LOCAL BODIES.—In the course of the discussions on the resolution moved by the Hon'ble Mr. K. Rama Iyengar at the meeting of the Legislative

Council held on 3rd February 1915., recommending fixed recurring grants for sanitation and medical relief in rural areas, the Government undertook to examine the possibility of giving grants-in-aid towards the cost of medical institutions newly opened by the local boards. The matter has now been considered and the Government have decided that they will in future make grants to local boards and municipalities to the extent of one half of the costs (initial and recurring) of the hospitals and dispensaries which may hereafter be opened by them. This undertaking may, however, be withdrawn or modified so far as grants not already given are concerned if the financial position of the Government prevents them from carrying it out in full. [G. O. No. 397 L., dated 9th March 1915.]

Legislative Intelligence.

[United Provinces.]

The United Provinces District Boards (Amendment) Act II of 1915 has received the assent of His Excellency the Governor General.

The Hon'ble Rai Bishankar Nath Bahadur asked when the Government would introduce the United Provinces Municipal Bill ?

Government replied that the Bill was under the consideration of the Government of India and that it was not possible to say when it would be introduced into Council.

The Hon'ble Munshi Narsingh Prasad asked what became of the proposal to extend to local bodies the principle of communal representation by separate electorates ?

Government replied that like certain other controversial matters, the question of separate communal electorates had been postponed for the present.

[Central Provinces.]

CONSTRUCTION OF FEEDER LINES.—The Hon'ble Sir Kasturchand Daga asked if the Government had received any proposals from private companies for the construction of feeder lines from Dhamangaon to Yeolinal, from Akola to Hingoli and from Akola to Khandwa, and if not whether the Government would advise the Government of India to undertake the construction of the lines at an early date as they were necessary for the development of the province.

The Hon'ble Mr. R. H. Tickell answered the first part of the question in the negative; as to the second part of the question, he replied that Government had been in communication with the Railway Board as to the necessity for early construction of the Khandwa-Akola-Hingoli line; but that in view of the present situation, it was not considered desirable to make a further reference on the subject.

VACCINATION BILL.—The Central Provinces Vaccination Amendment Bill has been introduced in the Legislative Council. The object of the Bill is to amend the Vaccination Act, XIII of 1880, so as to enable the Local Administration to extend it to Notified Areas as defined in Section 169 of the Central Provinces Municipal Act, 1903.

SLAUGHTER OF ANIMALS BILL.—In the Central Provinces, of recent years a number of slaughter-houses have been established in certain districts at which cattle, mainly old or infirm animals, are slaughtered wholesale for the purpose of export and sale of their hides and other marketable products. Serious abuses have arisen in connection with this trade particularly when these slaughter houses are situated beyond Municipal limits. On economic, sanitary and humanitarian grounds alike, it is desirable that this trade should be more effectively controlled than it can be at present under the provisions of the ordinary law. Even in the case of slaughter-houses situated within Municipal limits, experience has shown that the present Municipal law inadequately provides for the regulation and control of these slaughter-houses,

and in such a matter, the control of Municipal Committees is apt to be ineffective. In these circumstances, it has been deemed advisable to grapple with this question by means of legislation *ad hoc* and the Central Provinces Slaughter of Animals Bill has been introduced in the Legislative Council and will, it is hoped, be successful in this connection. It is impossible, because of economic and other considerations, to prohibit this trade, but it should be possible by effective control thereof to prevent the various abuses, sanitary and other, which are apt to arise in connection with it. The Provisions of this Bill provide for efficient control and inspection of these slaughter-houses by means of Inspectors and, in addition, stringent penalties are provided for various offences and abuses which commonly arise in connection with the trade. Still further, power is taken in Section 9 of the Bill to divest any Municipal Committee of its powers under the Municipal Act, 1903, in respect of any slaughter-house situated within or without the Municipal area and to transfer the control of such slaughter-house to the Deputy Commissioner.

[Punjab.]

The Hon'ble Sardar Gajjan Singh asked the Government to state in how many district boards in the Punjab there were non-official presidents and vice-presidents in the years 1913 and 1914 and whether the Government would be pleased to substitute non-official in place of official presidents and vice presidents?

The Hon'ble Mr. Mant replied :--

"In the case of all but two districts the existing rules and orders provide that the Deputy Commissioner shall be *ex-officio* Chairman of the District Board. During the two years referred to by the Hon'ble Member the Deputy Commissioner was chairman of the board in every district. The vice-chairman is elected by the members of the board, and, as the result of these elections is not reported to Government, no information is available as to the number of non-official vice-chairmen. The Lieutenant-Governor is not prepared to take any general action in the direction of removing official chairmen, as he doubts whether such action would at present be in the true interests of local self-government; but if any district board evinces a desire to appoint a non-official, His Honour will be ready to consider the individual case. He is, however, averse from interfering with the discretion of the boards in the matter of the election of vice-chairmen."

[Behar and Orissa.]

The Hon'ble Babu Dwarka Nath asked the Government to state the number of Pardanashin Hospitals in each district of the Province, and the annual expenditure incurred on them and the sources from which the expenditure was met.

Government replied that there were 6 Pardanashin Hospitals in the Province. Their names together with a statement of their annual expenditure on maintenance and the sources of their income are given in the following statement :—

Serial number.	Name of Hospital.	Annual expenditure (as incurred in the year 1913).	Sources of income.
1	Duchess of Teck Hospital, Patna.	Figures are not available. This is entirely a private institution.	Maintained by the Church Missionary Society.
		Rs. A. P.	
2	Lady Elgin Zenana Hospital, Gaya,	8,076 0 0	Interest from investment of Rs. 51,900. Contributions from Government and District Board and private subscriptions.
3	Lady Dufferin Hospital, Bettiah, Champaran.	21,176 0 0	Entirely borne by the Bettiah Estate.
4	Lady Dufferin Hospital, Darbhanga.	11,225 0 0	Entirely borne by the Darbhanga Estate
5	Rani Shib Tarini Hospital and Victoria Memorial Ward, Bhagalpur.	6,722 0 0	Interest from investment, private subscriptions and contributions from Municipality and District Board.
6	Dublin University Mission Hospital, Hazaribagh.	5,418 0 0	Private subscriptions and Government grant of Rs. 4,000 a year.

The Hon'ble Rai Bahadur Nishi Kanta Sen asked whether it was a fact that District Boards although empowered by Section 87 of the Local Self-Government Act, 1885, to provide for the proper sanitation of the District, were not authorised to exercise all the powers which were invested in the Union Committees by Section 115 to Section 118 B, in areas which

were outside the limit of the Union Committees and if so, whether it was contemplated to vest all the District Boards with necessary powers?

Government replied that the law was as stated by the Hon'ble Member, and that Government did not consider it necessary to amend the law. A Union Committee was the agent of, and subject to the control of, the District Board, and was the most suitable agency for the improvement of local sanitation. It was open to the District Board to apply to Government to constitute any village or group of villages into a Union.

The Hon'ble Rai Bahadur Nishi Kanta Sen asked if it was a fact that District Boards were unable to enforce sanitary measures in rural areas for want of powers similar to those vested in Municipal Boards by the Municipal Act?

Government replied as follows:—"A greater degree of control in sanitary measures is necessary in Municipal than in rural areas, and consequently Municipalities have been given powers to provide special services and to levy special taxes to cover their cost which have not been granted to District Boards. The Local Government have received no complaint from any District Board as to the inadequacy of its powers to enforce sanitary measures in rural areas."

Recent Publications.

HANDBOOK ON THE LAW OF MUNICIPAL CORPORATIONS.
By Richard W. Cooley. West Publishing Co. Price \$ 3.75.

A DIGEST OF THE LAW AND PRACTICE RELATING TO
LOCAL GOVERNMENT IN ENGLAND AND WALES. By Arthur
D. Dean and E. J. Rummer. Price \$ 1.35.

A TREATISE ON THE LAW OF PUBLIC UTILITIES OPERATING
IN CITIES AND TOWNS. By Oscar L. Pond. The Bobbs-Merrile
Company. \$ 6.

HEALTH WORK IN THE SCHOOLS. By E. B. Hoag and
Lewis M. Terman. Houghton Mifflin & Co. Price \$ 1.60.

ASIATIC CHOLERA. By J. F. McMillan. Price 6*d.* net.

A MEDICAL DICTIONARY FOR NURSES. By A. E. Pope
3*s.* 6*d.* net.

THE CASE HARDENING OF STEEL; an illustrated exposition of the changes in structure and properties induced on mild steels by cementation and allied processes. By H. Brearley
Price 7*s.* 6*d.*

AMERICAN SEWERAGE PRACTICE; Vol. I, the Design of Sewers. By Leonard Metcalf and Harrison P. Eddy. Price 21*s.*

[Vol. II (Construction of Sewers) is now in press; Vol. III (Disposal of Sewage) is in preparation].

CARRYING OUT THE CITY PLAN. By Flavel Shurtleff and Frederick Law Olmsted. Price \$ 2.

GARDEN CITIES AND CANALS. By J. S. Nettlefold.

CONCRETE ROADS AND PAVEMENTS. By E. V. S. Hanson, Editor of *the Cement Era*. Price \$ 1.50.

ASPHALTS, THEIR SOURCES AND UTILIZATIONS. By T. Hugh Boorman. \$ 2.

Notes of Cases.

(Important Cases will be fully reported hereafter.)

RIGHT TO PHOTOGRAPH:—An interesting question was that recently presented to the Attorney-General of Wisconsin as to whether officials who have the right to enter premises for purposes of inspection have also the right to make photographs showing the conditions found by them in such premises. In an opinion to the State health officer, C. A. Harper, the Attorney-General held that an inspector has such authority for the purpose of being better able to show the conditions existing to the administrative officials. This seems a logical deduction from the right to inspect and necessary part of that right. The possibility that such reports as are made by deputy health officers may be rendered more graphic by photographs

of the premises concerned and made available as public records for public use or public inspection should have a salutary effect.

LIABILITY FOR DEPOSITS OF MUNICIPAL CORPORATIONS :—
When a bank in which Municipal funds are deposited fails, the question usually has to be threshed out as to the respective liability of the officer making the deposit and the municipality to stand the loss. In *Stevens vs. City of Ludlow*, the Kentucky Court of Appeal held that the city council having selected the depository and having directed the treasurer to keep its funds in the institution selected by it, the treasurer could not be considered liable, but that the city itself had assumed responsibility for the integrity and solvency of the institutions selected. Most Municipalities, however, try to avoid the possibility of such a situation by requiring surety bonds or collateral security for deposits of Municipal funds. See *Colchester Guardians vs. Moy*, 57 J. P. 265 ; Law of Municipal Corporations in British India, Vol. III, p. 105.

HIGH COURT, MADRAS.

KUMARASWAMI SASTRI, J.

MARCH 8, 1915.

*Injury sustained by passengers in streets—Negligence—
Liability of the Corporation—Employment of a contractor.*

In an action brought by the plaintiff for damages for the loss of his right arm owing to the negligence of the contractor employed by a Municipal Corporation for laying down pipes in a public street, *held* that the Corporation was also liable though by virtue of the contract entered into with the contractor, he undertakes to be responsible for all injuries himself and to indemnify the Corporation against all damages and costs.



Practical Points.

[The questions of subscribers only are answerable in the Gazette. The name and address of the subscriber must accompany each communication which must be legibly written].

7. *Meeting of Municipal Councils—who to fix date and hour of meeting.*

The Municipal Council of A resolves at a meeting that the next meeting shall take place on a particular date. The Chairman instead of holding the meeting on that day issues notices for a meeting to be held on a different date. Is the Chairman's action regular? Should the former resolution be formally cancelled?

ANSWER. The fixing of the date by the Council has no binding effect. The Chairman has the power to fix the date and hour of the meeting, unless otherwise provided by statute. It was competent for the Chairman to fix the date of the meeting and to ignore the resolution. [See *Reg. v. Tottenham (Vicar) or Wilson*, 45 J. P. 140. *Law of Municipal Corporations in British India*, Vol. III, pp. 51 and 53].

8. *Payment of rates made by mistake—whether amount can be legally recovered.*

The occupiers of a house have for 3 years paid water rates on the house to which there has not been any water laid on and which they were not legally bound to pay. Can the council be compelled to repay all or any sums received?

ANSWER. If the payment was not made under compulsion, it is purely a voluntary one; and the council cannot be compelled to refund. If the amounts, however, have been illegally collected or collected under a threat of distress, a suit will lie for its recovery. A payment under a mistaken notion of liability cannot be recovered back. [See *Slater v. Mayor of Burnley*, 53 J. P. 70; S. C. (No. 2) 53 J. P. 535; *Leake on contracts*, p. 85; *Law of Municipal Corporations in British India*, Vol. III, pp. 151-2].

9. *Affixing of name of street on a house against the wishes of the owner.*

The owner of a building put up the name of a street on a board at one end of the street. The Municipality decided to change the name of the street and affixed a board with that name to a house belonging to the owner at the end of the street. The owner objected and caused the name to be painted over and obliterated. Is his action legal?

ANSWER. The Municipality have power to fix the name of the street upon the house without the consent of the owner. If any damage is caused, he may be entitled to compensation. In the case put, the owner can be prosecuted and convicted. (*Collins vs. Hornsey Urban Dt. Council*, 65 J. P. 600 ; See Law of Municipal Corporations in British India, Vol. III, p. 319).

The Local Self-Government Gazette.

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APRIL

[1915

Health Officers for Mufassal Municipalities.

“**T**HE Plague Commission in 1901 strongly urged the necessity for the improvement in certain directions of the organization of the Sanitary Department in India, with the object of dealing more effectively with outbreaks of plague and other epidemics and with the general sanitation of India. In 1905, a scheme was formulated by the Royal College of Physicians for the creation of a medical and sanitary organization in India and the inadequacy of the sanitary services, as then constituted, was again emphasised.”

Such is the opening paragraph of the now famous “Resolution of the Government of India, Department of Education (Sanitary) Nos. 921-36 dated Simla, the 23rd May, 1912.”

The Madras Government, however, had already taken certain steps to improve their sanitary organization. In G. O. No. 1770M. dated 13th October 1904, it was decided that in filling up vacancies in the appointments of sanitary assistants to District Medical and Sanitary Officers after 1st April, 1908, preference should be given to candidates possessing a degree in sanitary science and that in the meantime all assistant surgeons nominated to these appointments should be required to undergo at the King Institute the course in Minor Sanitary-Engineering prescribed for Sanitary Inspectors. It was found, however, that none of the candidates took a sanitary science degree and only 8 Civil Assistant Surgeons attended the course

in 1906, while none attended in 1907 and 1908. The Government took steps to ensure that a larger number of qualified Sanitary Officers would be available for service, and changed the course of instruction to a considerable extent. In addition, in the competitive examination for Assistant Surgeons, special marks were given to those candidates who had attended this special course.

The Government of India had long recognised that " while improved water-supply and efficient drainage may, to a considerable extent, prevent cholera and reduce the severity of malaria, trained Health Officers and a Sanitary staff are required to deal with plague, small-pox and tuberculosis, infant mortality, the inspection of the food-supply, to advise Municipalities in regard to building regulations, to endeavour to prevent the erection of insanitary houses and to improve those already in existence and to put before the people the elementary principles of sanitation."

The conclusion, therefore, was that some scheme was necessary whereby trained Health Officers should be available, the Health Officers being a necessary preliminary to any substantial improvement in sanitation. The Civil Surgeon or the District Medical and Sanitary Officer had no time to devote sufficient attention to the sanitary requirements of even the head-quarter towns, and it was impossible for him to make more than an occasional inspection of other towns. The Government of India, therefore, sanctioned a scheme which provided for the appointment of " Health Officers of the first class" for larger Municipalities and of "the second class" for the smaller towns. The first class Health Officers "will be required to have a registerable medical qualification and a British diploma in public health." The necessity for a British diploma will, however, be only temporary as the Government of India trust that it may be possible to remove the second restriction so soon as arrangements can be made, which will enable Indians trained in this country to become Health Officers

of the first class. For Health Officers of the second class, the main qualifications will be a good general education supplemented by a course of training in public health approved by the Local Government." In this same resolution, the system in force in Madras, as regards trained Sanitary Inspectors for Municipalities, was recommended to other Local Governments.

The Government of Madras issued, in G. O. No. 457 dated the 14th March 1913, their decision regarding the numbers of Health Officers to be appointed. "First class Health Officers are required in the Municipalities of Calicut, Cocanada, Conjeeveram, Cuddalore, Kumbakonam, Madura, Negapatam, Salem, Tanjore and Trichinopoly, where the population exceeded 50,000, in Bellary and Ootacamund. The Health Officers of the second class will be proposed for the Sanitaria of Coonoor, Kodaikanal and the following 17 towns in which the population ranges from 30,000 to 50,000." :—

Adoni.	Palamcottah.
Berhampore.	Palghat.
Bezwada.	Rajahmundry.
Coimbatore.	Tinnevelly.
Ellore.	Tuticorin.
Guntur.	Vellore.
Mangalore.	Vizagapatam.
Masulipatam.	Vizianagram.
Nellore.	

The Government of Madras declined to introduce the system of employing joint Health Officers for groups of small towns. With the aid of grants from the Government of India and from Provincial Funds, Municipal Councils were to be charged with only 25% of the pay of Health Officers in their employ, and where further assistance was necessary, consideration was to be given to the propriety of additional grants.

The Government of India in the Resolution already referred to suggested that for first class Health Officers,

a salary of Rs. 300-20-500, and for second class Health Officers Rs. 150-10-300, was suitable.

It is most necessary that the exponents of this important new activity should be thoroughly educated and be young men of some practical experience ; and as it takes at least 9 months hard work to educate a British Medical Graduate sufficiently to allow him to present himself as a candidate for a D. P. H., it would seem that the pay offered to the second class M.O.H.'s in the absence of all private practice is not sufficient. At the same time it is to be remembered that experience as a second class M. O. H. eventually leads to appointment as a 1st class M. O. H. Shortly after the receipt of the Government of India's Resolution, the University of Madras began to consider the advisability of amending the regulations regarding their Licentiatehip of Sanitary Science, for which very few candidates presented themselves. If the necessity for a British Diploma for 1st class M. O. H.'s was to be only temporary, then drastic changes would have to be effected before the diploma could be accepted in lieu of a British D. P. H. The whole curriculum for the degree was overhauled and new regulations were drawn up based on those laid down for the British D. P. H. The Madras Government accepted the proposals and the classes for the new degree now called "Bachelor of Sanitary Science" were commenced on 1st July, 1914.

The whole machinery necessary for the turning out of M. O. H.'s has therefore been in force in Madras for nearly a year, as in conjunction with the B. S. Sc. classes, arrangements were made by which medical graduates could be trained for second class M. O. H. posts. The war has no doubt had something to do with the delay, but it is understood that several Municipalities are to have Medical Officers of Health appointed very shortly. Unfortunately, there has been an absolute lack of supply of candidates for the second class posts and this is probably due to the insufficiency of the pay as already mentioned. A second factor may be that very few of

the Madras Medical Graduates have any inclination towards Public Health work, this possibly being due to the fact that the mass of people have as yet no knowledge of, or desire for, sanitation.

In Britain, for smaller Municipalities, part-time Health Officers have been employed to a considerable extent; that is, one of the Medical practitioners in a town supervises sanitation and advises the Municipal Council on health problems generally devoting a certain number of hours a week to those duties, the rest of his time being spent in private practice. In this way the Municipality has its public health work carried on at considerably less expense, a very important matter for towns with a small Municipal Budget.

In the absence of a steady supply of candidates for second class M. O. H., however, this plan may be worth remembering and it might be given a trial. It is to be remembered, however, that this is by no means an ideal system, as the temptation usually is to neglect the Municipal work for the practice and it very often happens that the allowance given by the Municipality to their part-time M. O. H. really means subsidising the fortunate individual concerned in competition with his fellow practitioners.

In any case, it cannot be doubted that the very high mortality rates that prevail in all towns, large and small—in the Madras Presidency, will not be reduced to any great extent until Municipalities realise the necessity for having Health Officers. The Government of India and Local Governments have given every encouragement both financial and otherwise to Municipalities and it should surely not be impossible for even the poorest town, to raise 25% of the money required to secure the services of a competent Health Officer.



Beauty in Rural Villages.

[BY STANLEY P. RICE, I.C.S.]

NESTLING amongst its groves of trees—pipal, margosa, bamboo—the ordinary Indian village looks idyllic. The thatched roofs peeping out from their leafy shelter, and watched over by the gleaming white temple on the rising ground would make a picture for any artist of rural scenery. We go a little closer and disillusionment begins. The trees open out and the naked squalor of the village appears. Here the careful housewife has thrown the refuse of her house into the public street: there an enterprising house builder has littered the place with broken brickbats: further on there is an assorted heap of unconsidered trifles—old tins, bits of paper, discarded leaf-plates, odds and ends of straw, perhaps the bones of a dilapidated cart wheel. The only green that meets the eye apart from the outside ring of guardian trees is a forlorn and most depressing bush of prickly-pear which it is nobody's business to remove.

If that is a true picture of an Indian rural village—and I challenge any one to say that it is not typical of hundreds—what can be done to improve the state of things? You will note that I am not dealing with sanitation: my subject appeals to the eye and not to the nose. Neither have I any quarrel with agriculture: let it be acknowledged at once, at least for the purpose of this argument that the manure heaps, whether in the backyards or in the outskirts of the village, are necessary evils. Let us freely admit that the straw ricks add rather to the rural beauty of a village. The streets are no doubt crooked: the houses built where it may have seemed good to each individual; but crooked streets are not necessarily ugly, though they may interfere with aesthetic improvement. At any rate we will leave your straight streets to your town-planner, who happens to be the latest 'lion', and proceed to other considerations.

The case is not hopeless, because the Indian shews a great appreciation of decorative effect. We need not admire

the tiger-hunt frescoes or the anatomically curious animals with which some people adorn their houses, but surely every one must have been struck by the ingenuity and grace of some of the complimentary garlands or of the triumphal arches, put up to receive some local magnate. Above all, except in those sad regions where the women dress in lugubrious blues and the men disfigure themselves in hideous drawers, no scheme of dress could be more attractive both for its colour or for its form than the reds and browns and yellows of the women's saris, the dazzling white or rose pink of the men's cloths and the variegated hues of their turbans. And indeed the people are fortunate in that the rich, red brown of a healthy skin will support almost any colour.

Then why does this colour-loving people live in such drab, unlovely surroundings? The answer which almost every one will give—and it is a true answer as far as it goes—is that what is every one's business is nobody's business, that each man is content to look after his own premises and the public places are none of his concern, in short that there is no co-operation. But that is not the only reason. All land that is not private property belongs to the State, who is the trustee for the public, and Government must therefore repress firmly any attempt by the individual to meddle with public land lest he should later lay his private claim to it. But the Government is represented in diminishing degrees of visits by the Revenue Inspector, the Tahsildar, the Divisional Officer and the Collector, whose main object is to see that the utilitarian and to that extent perfectly laudable intentions of Government are carried out, and who have not the time if they have the inclination to work out a scheme of artistic improvement for every village. Consequently their efforts are generally limited to the repression of encroachments and to vague exhortations to the village head to keep the place clean, not in the interests of beauty but of health.

Now it seems to me that something might be done to encourage the growth of trees in streets which are broad

enough to admit of it. This would attack the people along the lines of least resistance, for each man would have an interest in looking after the tree or trees which he has planted in front of his house. After all it is they who have to live there and not the Government nor the Collector nor even the Revenue Inspector. There are many streets which could well bear the addition of two rows of palm trees, greatly to their advantage and not at all to the disadvantage of traffic. There is many an open space which the sacred combination of pipal and margosa or a clump of more secular trees would adorn. The value of trees in a rural village as a means of decoration cannot be overrated, and Englishmen above all are familiar with the ivy-clad church tower and the cottage covered with honeysuckle and climbing roses.

It is just where Nature has been least lavish that man seems to have conspired with her to make desolation more desolate, and this might justify the inference that the artistic instinct is born of Nature and developed by her. The dreary plains of Alur in Bellary are broken only by drearier villages which seem to have said the last word in ugliness. Here too live the people whose mode of dress is so unattractive. All the more necessary then is it to try and foster the artistic instinct in them and to make up by art what is wanting in Nature.

This is no place to discuss the condition of the Pariah and the possibility of his uplifting. It is sufficient for us that he is at present an unattractive person and that the caste Hindu is justified in keeping him at arm's length. Indeed this has its hopeful side, for to some extent it betrays the artistic sense. We cannot begin with the 'cheri' but if only the caste villagers would join together to employ a Pariah to clear away unsightly rubbish, not in the name of microbes and vibrios but in the name of beauty, might we not hope that the example would in time react on the Pariah, so that the village would itself be contributing, however unconsciously, to his uplifting?

Can we not then approach the people from a different point of view? Can we not appeal rather to their artistic sense than to their knowledge of hygiene? Have we ever made any serious effort to do so and have we not rather sacrificed everything to utility? Why should we not now encourage the villagers to take a pride in their villages to cover the nakedness of their houses with Nature's veil and to hide the squalor of their streets with the beauty of her palm trees? It seems such a little thing to do and yet it counts for so much.

Economics of Town Planning in Relation to Land Development *

[BY GEORGE L. PEPLER, F.S.I.]

PERHAPS I ought to preface my remarks by referring to the permanent Civil Service appointment that I have recently received, and to mention that this paper was in the shaping while I was still in private practice and therefore I have not suppressed it, although of course the views expressed have nothing to do with my present official position.

The title of this paper was suggested to me by our President when the programme for the session was drawn up. Now I have come to set my ideas on paper it is borne upon me that I cannot possibly write up to such an ambitious heading. All I can attempt is to set out a few of the economic problems that I have met with in practice, with a view to initiating a discussion into this important side of the question: I refer to Town Planning in general as it may affect property owners and do not restrict my observations to operations under the Act.

Why should landowners develop their land on Town Planning lines? Many of them have in the past cut up their estates profitably on the old lines and what advantage can

* A paper read before the Town Planning Institute.

accrue to them by changing their methods? I do not wish for a moment to suggest that landowners as a class think only of their own interests because experience has convinced me that this is very far from the case. The point I wish to make is that unless Town Planning is economically sound, all its other virtues are of little practical use.

Our object this evening is not to discuss the rights and wrongs of the present property laws but, taking things as they are, to consider whether Town Planning is financially sound as regards land development. In my opinion it is and for the following general reasons :—

I think it is true that more money has been made in the past out of land by the old methods than is being made now even in cases where methods that we should approve have been adopted. This does not prove that our methods are unsound but rather that past carelessness has queered the pitch.

To realise the present position it is necessary to look back a little :—Up to about the middle of last century, England was principally an agricultural country and the growth of towns was comparatively slow. Buying a plot and building a house was a leisurely matter as we can gather from the old estate and deed plans with their elaborate north points and headings which must have taken hours to do and were apparently considered of more importance than any attempt at accuracy in the plan. This was the kind of land dealing machinery in operation when the great industrial revival came along and people flocked to the towns, which consequently grew at an amazing pace. Industrialism was the one thing in all men's thoughts—where and how the workers were to live was largely a side issue. Consequently, hardly anybody looked ahead and landowners with the rest mostly just sold off their land as demanded often without restriction and without any thought as to the possible effect on the rest of their estates.

While the demand was insistent, things went well for the landowner but the day of reckoning was to come.' In many cases over-speculation had been indulged in by the developing middlemen which resulted sometimes in derelict estates and in other cases the speculator, having bought without restriction and only being interested in clearing off the block of land he had bought, altered his own restrictions halfway and sold off the balance for another purpose to the injury of both his original purchasers and of the large landowner from whom he had bought the block. One could give many instances of large estates that are now at a standstill because development was allowed to commence in this way without any general plan or conception, the result being that the attractions and amenities of the whole estate have been damaged. Not only has this lack of foresight spoilt the market for the rest of the estate but frequently one finds extra cost entailed in roads and sewers, because each block has been treated by its purchaser in the cheapest possible manner for his own ends alone; and consequently when adjoining land comes to be developed, there is no general scheme to fit into and money has to be spent that might have been saved and efficiency has to be sacrificed. One has even met frequent cases where an owner has sold off frontage land that actually blocked him from proper access to develop back land.

There is no need to labour the point as in these days the necessity of a comprehensive scheme in estate development is generally recognised and that such a general scheme should include the settling of such matters as the position of the principal roads, the depth and gradient and position of sewers, the class of property suitable for each part and the rotation in which the land should be developed taking into account the effect on existing farm tenants.

This recognition has gone a long way to winning the Town Planning battle but it does not of itself demonstrate that it is profitable for such a general scheme to be on what are known as Town Planning lines. Mr. Raymond Unwin

has dealt very clearly with one side of this question in his pamphlet "Nothing gained by overcrowding!" in which he shows by examples that taking land at £500 per acre, the total cost of land and roads per house at 34 to the acre is £43-7-6, at 15·2 to the acre £62-7-5, or for 178 yards of extra land the equivalent ground rent is only 3½d. per week more. Mr. Unwin goes on to show that by variation in types of road under a Town Planning Scheme, even this small extra equivalent ground rent might practically be wiped out.

One factor that estate developers have frequently overlooked is that of time. It may pay to cut up your estate into small plots with the consequent numerous roads, involving heavy capital expenditure, if your plots are likely to sell quickly; but if sales are likely to be slow, dead interest on the capital expenditure will rapidly eat up the profits. Another factor having a similar bearing is the great waste caused by flank frontages and the loss of main frontage by the space taken up by side roads in the old style development. Not only is the flank frontage usually of no value but the corner plots have to be sold at a reduced price because of impending road charges.

One has to remember, however, that although the larger plot has an intrinsic value to the occupier, that value, except indirectly to health, is only realisable in cash if produce is raised in the garden. It has been practically demonstrated at Bournville by four sets of tests, covering 25 gardens varying in size from 294 square yards to 650 square yards, and averaging 424 square yards, that the average net yield for each garden throughout the year was 2 per week. The occupations of the gardeners were as follows: carpenter, blacksmith, window cleaner, jobbing gardener, rent collector, wood turner, lodge keeper, police constable, engine driver, boilermaker, factory labourer, &c. On the other hand, there are many people who do not care for gardening or have not the necessary leisure and again there are the majority to whom actual rent appears more important than value for money, so that at the

moment, generally speaking, the occupier is not demanding more space and although he may be glad to take it, if offered, he is not willing to pay more for it. Nevertheless the demand for more space and better conditions of living is rapidly growing and the wise owner will lay out his estates with a view to this coming demand rather than by short-sighted present development make it impossible to meet what will be required in the near future.

Space about buildings, the provision of open spaces, and convenience and economy as regards roads and sewers are not the beginning and end of Town Planning; dignity and appearance have also to be considered, and here the land-owner is often faced with a very difficult problem.

Without question the more perfectly and the greater the foresight with which an estate is developed from the commencement the greater will be the ultimate value, as all that is accomplished, if well done, should enhance the future value. Many owners realise this, but then comes in the question of immediate finance. They are quite willing to have a scheme prepared but they lack the means to carry it out. In this respect it is well for any Town Planner, called in to advise, to bear in mind that in framing his scheme the first thing he has to consider is the financial resources of his client and secondly, the type of demand for which the estate has to cater. It is futile to put on paper a grandiose scheme including great boulevards, 'places' for grand public buildings, and roads set far apart, when your client cannot possibly afford to carry out the conception and the demand is for cottages for which a depth of 150 ft. is ample. Another difficulty is that plans by themselves are not convincing as very few people can read plans; what is essential is some actual examples both of buildings and types of roads, &c. The difficulty is to provide these examples. Probably arrangements can be made for the roads and sewers but as regards buildings there is much greater difficulty, and this difficulty is particularly patent in the case of settled estates or where

the ownership is otherwise restricted and plots can only be leased, or if sold, the proceeds cannot be used for erecting buildings.

If any real architectural harmony is to be achieved, it is essential that groups of buildings should be designed by one man and this is not possible when plots have to be sold or leased to separate applicants as they are intent only on their own comfort and taste and do not care a rap about fitting in with their neighbours.

Anyone who has tried estate development knows only too well that house property is not a form of investment that appeals to the general public and the consequence is that there is of necessity a growing tendency for people to own their own houses. This has opened the way for two methods of house provision that tend to help the Town Planner : (1) Copartnership Housing, which does provide groups of buildings and permits many of the advantages of ownership without some of the liabilities ; (2) the building of houses for sale by Estate Development Companies. In both cases there is the opportunity for combined architectural treatment and good examples can be seen at the Hampstead Garden Suburb and elsewhere.

It has to be remembered, however, that the public as a rule likes frills and wants big rooms at little cost so that except when the demand is very urgent and the public has to take what is provided for it, without question, the architect must use great discretion and beginning with the recent local tradition work up gradually to better things.

The speculative builder is a much maligned person but one should bear in mind that he is the man who up to now has almost entirely met the housing demand and as he is usually a pretty shrewd person, one can be sure that on the whole he has been giving the public what it wants. Therefore one should study carefully his achievements and, rather than destroy, see how they can be adapted to more artistic results, without increasing the cost appreciably. A great

deal can be achieved in this way and by degrees one can hope to arrive at a house that not only satisfies the artistic eye but also 'fits' the ordinary man, who has got used to one style and fears discomfort from too sudden a change.

It is not only as regards buildings that financial difficulties arise, there is also the question of open spaces. One may show them on paper but who is to make them and how are they to be maintained?

If a fairly large block of land is being sold or leased to a Tenant Society, there should be no difficulty, as such an organisation can raise funds for laying out and maintaining an open space, but in cases where plots are being disposed of separately? it is more difficult to obtain concerted action. The general feeling seems to be that such things should be thrown in by the owner and that he should bear all costs of construction and maintenance and at the same time should charge no more for his land! Such a view to my mind is quite unwarrantable but it has to be reckoned with. Where the demand for land is great, it is an easy matter to put an annual charge on each plot; but where one is coaxing purchasers, this cannot be done. In some cases, the simplest and best solution may be to hand over the open space to the local authority, if they will take it; but this means that it will be thrown open to all, whereas if larger houses will surround it, most residents would prefer a more limited use. Usually, I think, the best method is for the owner to lay out the open space, if he has the funds, and then either charge for admission to the whole by letting out keys to residents or reserve part for tennis courts, &c., which can be let to clubs at a total rent sufficient to cover the cost of outlay, interest, and general upkeep.

Another problem that has a financial bearing is that of estate restrictions: they are essential if good development is to be achieved; but while each purchaser wants his neighbours restricted, he never considers that there is any necessity that

he should be controlled, so that on the whole restrictions are unpopular, and unrestricted land, at present, is considered to have a better market value.

As to what can wisely be insisted on : I think that in the past far too much emphasis has been laid on a mere money restriction. It is probably necessary to insist on certain minima but the design and character of a house are far more important. Indeed who would not far rather set a small house on a big plot than a big house on a small plot, and, within reason, most would prefer it for a neighbour.

The most important restriction, perhaps, is as to the use that the property may be put to and next that the design should be approved by a superintending architect. This means a good deal of trouble to the superintending architect and trouble for which the purchaser cannot be expected to pay in full, but which it is well worth the while of the landowner to recompense. The architect in charge should let the purchaser know at the earliest possible moment the type of design that is suitable, so as to prevent a false start.

Also I suggest that it is well to state in the sale conditions what materials are barred for outside work, such as naked Fletton Bricks and Blue Slates in most cases, and this is particularly necessary where you are trying to pull together an Estate that has been started on careless lines. The minimum pitch of roof should also be stated : in fact, failing examples, the more clearly you indicate the type of house you desire, the less likelihood there will be of misunderstanding and unnecessary trouble. Again the type of fence, wall, or hedge needs carefully settling as nothing looks worse than an incongruous mixture : one has to remember in regard to this that everyone is entitled to have at least a dog proof boundary.

These difficulties that have been touched upon, which face the landowner wishing to develop his estates on Town Planning lines, may sound rather formidable, but it is much

better that they should be faced. In my opinion, however, the result will fully justify the extra trouble, because the benefit is bound to be reaped in the future when the good work done will be manifest and will be appreciated and taken advantage of by people in search of nice homes, however much their predecessors have made difficulties while the picture was in the making. The considerable amount of present depreciation due to bad initial development in the past is, I think, quite sufficient proof that it is well worth while to persevere in the better way.

The Town Planning Act has considerably affected the economics of Estate Development, on the whole, I think, decidedly for the better and in conclusion I should like to touch on one or two pertinent points :

First on the debit side (1) there is the disadvantage that development may be interfered with while the scheme is being formulated and this may take a long time. The question of speeding up the preparation of schemes is one that requires serious attention : probably the solution lies in making the scheme as simple as possible in the first instance and trusting to varying schemes for filling in details when the necessity for them becomes apparent.

(2) Restrictions come into force that bind the original vendor as well as the purchasers and these restrictions have the force of an Act of Parliament and can only be amended by a subsequent scheme. On the other hand, it is just because vendors have not been bound by their own restrictions that many people are shy of buying a house as they have so often seen good property greatly reduced in value because original estate restrictions have been abandoned. Again, where the Act is not in force, one landowner may develop his estate with good houses, only to have them empty and depreciate because adjoining property has been cut up for masses of cottages or factories, &c. This adversely affects the landowner's pocket in more ways than one : he not only loses tenants or prospective purchasers, but also good saleable

property becomes derelict. The loss so caused to the rates has to be met by raising them generally and high rates become a further deterrent to development.

Without Town Planning powers an owner can only develop his own particular piece of land and quite frequently may be cut off from any road at all or at least from convenient access to railway station or tram or bus route. To remedy this hitherto has meant striking a bargain with an adjoining owner, which, because of his necessity has often proved an expensive matter to the original owner.

Many properties cut up for dwelling-houses would never have been so treated if a comprehensive scheme had been prepared for the whole district, as the sites are fundamentally unsuited for the particular class of property. A different class of property is now probably being substituted, as opportunity occurs, in patches, thus depreciating still further all the remaining property.

Practically all classes of development have had to conform to bye-laws that were general in application and could not be varied to meet particular cases.

In the past, no main traffic routes having been provided, trams and buses have often been brought along insufficiently wide and ill-adapted streets to the consequent deterioration of all the residential property fronting thereon on account of the noise, dust and danger.

There are often rights of way across land that make it extremely awkward to use for building purposes. To divert any of these has been a long and comparatively expensive business, each having to be the matter of a separate application, and, under the general law, only permissible under certain conditions which cannot always be fulfilled and which it is not always desirable to fulfil.

Quite frequently, estate boundaries are not at all convenient when building development is desired and lead to waste in the plotting and road-making. The alternative was

for the owner who first wished to develop to make some arrangement with his neighbours and this was often a difficult matter.

These particular difficulties of estate development all meant expense to the owner and tended to lack of efficiency. A Town Planning Scheme gives the opportunity for all these disadvantages to be cleared away, as it can provide settled conditions which are a great attraction to purchasers. Bye-laws can be adapted to express local requirements and thereby expense is saved and frequently extra beauty obtained. The position of future open spaces will probably be settled so that the owner will have definite attractions to offer. Estates can be developed to take advantage of routes intended for main traffic, instead of, as previously, there being no certainty as to the routes main traffic would follow. Probably by giving up land where properly required for main routes, owners will be permitted to make narrow residential roads and thus save expense in development. All rights of way can be dealt with together in consideration of the general plan and without the Highway Act restrictions. One could enlarge the point out, perhaps I have said sufficient to make clear that the Town Planning Act, if properly understood, and taken advantage of should prove of real financial benefit in estate development.

The Indian Budget and Local Bodies.

[BY A. RANGASWAMI IYENGAR, ASSISTANT
EDITOR, *THE Hindu*.]

NOW that the discussions on the Budget on the Provincial and Imperial Legislative Councils in India are over, it may be worth while to gather a few facts bearing upon the manner in which the "War Budget" has affected the

finances and financial resources of local bodies in India. It may be premised at the outset that in respect of their own revenues, local bodies in India must themselves expect a shortage of receipts for the year that has just closed and must also estimate for a smaller net revenue for the current official year. The extent, therefore, to which local bodies will be helped by the grants and subventions which are accustomed to flow to them both from the Imperial Government and the Provincial Governments, is of material importance in balancing their budgets and adjusting their ways and means.

Since the separation of the accounts of Local finance from Imperial finance in 1906, it is not easy to trace in the budget statements of the Imperial Government, the total amount of grants made to local bodies generally under the various heads ; and considering generally the large variety of purposes for which both recurring and non-recurring grants have been made in recent years, it is difficult to form more than a very general impression of the extent to which the performance of local services has been helped by subsidies from the Central Governments, Imperial and Provincial. The bulk of the grants recently made, however, by the Imperial Government out of their surpluses, has gone towards expenditure on education and sanitation, and in this view a comparison of the grants made to the several provinces during the three years ending with 1915-16 under these and similar heads, may therefore be expected to generally indicate the proportion in which local self-government has been helped by the Imperial Government.

The following table abridged from Appendix D of the Imperial financial statement for 1915-16, gives an idea of the special grants made to the several provinces in recent years :—

Statement of Special Grants.

Province.	Actuals 1913-14. Rs.	Revised 1914-15. Rs.	Budget 1915-16. Rs.
Madras ..	31,33,500	24,51,000	24,50,000
Bombay ..	20,78,000	20,88,000	20,80,000
Bengal ..	34,81,000	34,92,000	34,90,000
United Provinces ..	24,41,600	24,22,000	22,27,000
Punjab ..	14,11,000	16,84,000	13,55,000
Burma ..	11,82,000	24,92,000	9,92,000
Bihar and Orissa ..	24,53,000	14,64,000	14,61,000
Central Provinces ..	10,34,000	9,14,000	9,14,000
Assam ..	5,12,500	4,48,000	4,48,000
Total ..	1,76,29,600	1,74,56,000	1,54,17,000
or in £ ..	1,175,307	1,133,700	1,027,800

The shortage in grants made in the budget year and the curtailment in the provincial drawings from out of accumulated grants was explained by the Hon. Sir William Meyer in his Financial Statement in the Imperial Council on the 2nd March last, as follows:—

“In the present financial circumstances, we might *prima facie* have been expected to require Local Governments not to draw on their balances next year at all, *i. e.*, to restrict their total expenditure to the revenue raised within the year. But as I have previously mentioned, Provincial revenues too are being affected by the war, and a restriction such as that suggested would have involved a drastic curtailment of normal standards of expenditure besides arresting all further immediate development on education and sanitation, and interfering with the *quasi* commitments into which Local Governments have entered in carrying out a programme of special expenditure on these subjects which they had every reason to expect to be able to maintain. We find ourselves obliged therefore to recognize the practical need of some relief in this direction. The curtailment of total outlay which will still be necessary, and in regard to which we have received the most loyal co-operation from Local Governments, has resulted as is natural, in a large reduction (£1,070,000) in the grants for expenditure on public works. Provision is made, however, for some additional outlay under Land Revenue, Police and some other heads.”

The general position of local authorities in India in respect of grants from the Central Government may be stated as follows : There is a permanent recurring grant, made since the days of Lord Curzon, by the Imperial Government to local bodies through the Provincial Governments, to the amount of $\frac{1}{2}$ of the income they derive from the land cess. There are also recurring grants made for education from the permanent recurring grant of 50 lakhs for the promotion of popular education—announced by His Majesty at the Delhi Durbar—out of which grants-in-aid have been made to local educational institutions, and there have been, besides, every year, a large number of non-recurring grants made to the provinces for local works connected with educational buildings, outfit, etc., and with sanitary works including buildings, roads, bridges and the rest. It is difficult to show under one consolidated table how each province has obtained the benefit of these several grants from the Imperial Government, from year to year, but generally speaking, it may be said that local authorities obtain very little of the recurring grants under education, and only a portion of the non-recurring grants for buildings, etc. Although, therefore, the following figures relating to the grants made to the several provinces, of a non-recurring character, are interesting in themselves, it is not easy to make out what part of these educational grants have gone to local bodies :

Province,	Grants to end of 1915-16. (In lakhs of rupees)	Expenditure to end of 1913-14. (In lakhs of rupees)
Central Provinces ..	23.40	1.87
Burma ..	33.75	9.32
Assam ..	15.70	3.97
Bengal ..	144.61	27.51
Bihar and Orissa ..	41.37	11.35
United Provinces ..	64.95	30.79
Punjab ..	39.34	21.45
Madras ..	64.44	31.10
Bombay ..	57.77	11.91
Total ..	483.33	149.27

A more useful table is that exhibited in the memorandum of the Financial Secretary to the Government of India showing the progress made by the Provincial Governments in utilising the various non-recurring grants made from the Imperial revenues in recent years in aid of sanitation, from which the following synopsis has been taken :—

Province.	Grants to end of 1915-16. (In lakhs of Rupees)	Expenditure to end of 1913-14. (In lakhs of Rupees)
Central Provinces ..	16.50	4.14
Burma ..	21.50	9.32
Assam ..	6.96	4.00
Bengal ..	40.55	12.23
Bihar and Orissa ..	17.82	8.97
United Provinces ..	49.00	24.45
Punjab ..	28.97	14.41
Madras ..	39.25	10.68
Bombay ..	37.95	18.68
Total ..	258.50	106.88

Another substantial head under which Imperial grants of a non-recurring character have filtered to local authorities from the Provincial Governments is that of civil works, from which grants for roads, bridges, buildings and the rest, pertaining to local administration, are made. That portion of these grants of Provincial Governments which represents the amount granted to Local Boards and Municipalities may be shown as under :—

Revised.		1914-15.	Budget.		1915-16.
Province	Local Boards and Muni- cipalities.	Other Local Bodies.	Local Boards and Municipalities.	Other Local Bodies.	
Central Pro vinces ..	5.87		2.02		
Burma ..	6.00		12.00		
Assam ..	10.86		4.41		
Bengal ..	13.66	11.55	10.16	11.55	
Bihar and Orissa ..	11.94		8.63		
United Provinces ..	4.84		4.53		
Punjab ..	19.91		13.14		
Madras ..	70.96	6.96	30.93	3.01	
Bombay ..	8.27		8.27		
Total ..	152.31	18.51	94.09	14.56	

It will be seen that it is under this head that the bulk of the reduction in grants and the restrictions in the drawings from the accumulated grants of previous years have been effected, to which reference has been made in Sir William Meyer's speech last month. The total provision for grants to Local Boards and Municipalities in 1915-16 is, it is explained, 58·22 lakhs less than the similar expenditure in 1914-15. The bulk of the decrease occurs in Madras (Rs. 43·03 lakhs) and is due to a reduction in the special non-recurring grants given to local bodies for minor sanitary works in the construction of roads and bridges and for various other purposes. A reduced provision for similar non-recurring grants have been made in most other provinces also. The figures shown under grants to other "local bodies" consist mainly of contributions to the Calcutta Improvement Trust (Rs. 11·50 lakhs) and to the Madras Corporation (Rs. 3 lakhs for water-supply and drainage works.)

In the memorandum presented to the Madras Legislative Council last year, the Hon'ble Sir Harold Stuart gave the following useful table showing the total amount of aid which local bodies have received in the Madras Presidency from the Imperial and Provincial funds in recent years. A similar table prepared for other provinces would be equally interesting, but the published materials are insufficient to construct one for the purpose :—

GRANTS TO LOCAL BODIES. (*Madras*)

Year.	Education in- cluding grants for Buildings.	Water-supply and Drainage Schemes.	Minor Sanita- tion.	Hospital and other Medical Buildings.	Roads and Bridges.	Miscellaneous and for general resources.	Total.
1908-09	2.45	5.07	3.26	55	13.80	2.40	27.53
1909-10	2.45	3.82	4.95	34	14.23	3.22	23.01
1910-11	2.18	1.25	7.21	80	14.70	3.38	29.52
1911-12	4.41	3.94	11.64	3.29	19.33	4.42	47.03
1912-13	14.90	6.60	30.64	2 12	21.61	4.05	79.92
1913-14 Revised	30.46	6.16	23.27	9.83	30.61	5.05	105.38
1914-15 Budget	24.28	17.50	25.00	10.00	31.64	5.34	114.26

Many interesting reflections will suggest themselves to a student of local finance on a comparative study of the various figures above given, but they are beyond the scope of this note.

Local and Municipal Administration during 1913-14.

[United Provinces.]

The reports and reviews on the administration of civic affairs by local boards and Municipalities in the several provinces of this country are, so far as we have seen, usually of a stereotyped character, filled with dry statistical details and devoid of information or criticisms of general interest. It is refreshing under such conditions to come across with a really readable and interesting review which is happily conceived both in form and spirit and sums up with general observations the year's operations of the local bodies. The review of the Municipal Department of the Government of the United Provinces for 1913-14 is one of this description and we are glad to note that it brings out prominently the salient points of the Municipal administration in that province.

The Government start with the declaration that the exhaustive enquiry into the extension of primary education and the holding of the All-India Sanitary Conference at Lucknow afforded further valuable lessons to workers in Local Self-Government, while in eighteen more of the smaller municipalities, non-official gentlemen have taken up the arduous and important duties of Chairman. The further extension of this system of municipal administration to the larger cities awaits the revision of the Municipal Act.

Considerable activity was, the review says, again displayed in framing schemes of taxation for the replacement of octroi, and in all but three of the selected towns the change was completed. In the larger cities, the abolition of octroi is dependent on the extension of the system of terminal taxation, proposals for which have been worked out in those towns in which the evils of octroi are more especially felt. From a perusal of the figures relating to the Municipal income of the province, it is observed that octroi held a dominating position

as a source of revenue, but the failure of this system of taxation seems to be more or less due to the resulting paralisation of trade to a very undesirable extent and the consequent hardship to the labouring as well as mercantile classes. These sad results will, we hope, serve as an opportune warning to the people and authorities of this Presidency where, we believe, suggestions have sometimes been made to introduce octroi in the city of Madras and also some of the mofussil towns in order to augment the resources of the Municipal Boards. Although it is too early to gauge the effect of the abolition of octroi on local trade, the Commissioner of the Meerut Division remarks that retail importation of vegetables and farm produce has already been facilitated.

The system of terminal taxes which is being gradually adopted in the place of the octroi system does not also appear to be free from difficulties or complaint. The co-operation of railway administrations is found essential to the proper working of any system of terminal taxes; and further progress in the introduction and efficient working of this system is stated to have been delayed by the objections put forward by those Administrations to undertaking the duties of collection which forms an integral part of the scheme. In the absence of any well recognized principles governing the imposition of direct taxes under Indian conditions, Municipal Boards have been labouring under serious disadvantages in working out their revised schemes of taxation and the Lieutenant Governor is of the opinion that generally fair results can only be arrived at by comparison and co-ordination on definite principles of the various proposals. He therefore referred the whole question to a committee of experienced officers whose proposals are now under the consideration of the Government. In the meantime, it is observed that the new direct taxation has led to considerable and not unnatural discontent, as the disadvantages of this system force themselves on the attention of all, while the advantageous results of the liberation of trade can only be attained by slow degrees.

One other noteworthy feature under municipal revenues is that more than two thirds is derived from indirect sources and the Government observe that this is of great practical importance. They expect that even with the partial or total replacement of octroi by terminal taxes, this will continue to hold good, but they consider that such delusively easy methods of raising money cannot be indefinitely extended. For, these sources have, in the opinion of that Government, practically reached their limits already, whereas the demands on Municipal finances from the growing appreciation of amenities of all kinds are still at a very early stage of development. The Lieutenant-Governor therefore points out that such improvements cannot be indefinitely postponed in the hope of receiving doles from Government and that all Boards must before long take into most serious consideration the possibilities of supplementing the possible increases in direct taxation not by changes in octroi rates or terminal taxes, but by the development of Municipal property and by keeping steadily to the principle that special services, such as water supply or electric lighting, must as far as possible pay for themselves.

The work of the Improvement Trusts at Allahabad, Cawnpore and Lucknow deserves special notice. The main operations conducted by these Trusts were generally opening new roads, laying out of building sites, selling of plots and preparation of plans and estimates for the roads, construction of sewers, pavements etc., and for the extension of water mains. Considerable progress is noticed in this direction, particularly at Lucknow, where building operations have been practically completed in two sections of a new road and another section was opened for traffic. We note with much pleasure from the Government review that these operations have completely transformed the areas traversed by the new road and produced parks, markets and lines of shops the advantages of which are not to be measured from a purely financial or even utilitarian point of view.

We cannot close this report without quoting the concluding remarks of the Lieut.-Governor which will apply with equal force to all those who are connected with Local Self-Government :

“When the present Municipal Act was brought into force, it was expected to cover all requirements for many years to come. The rapid growth of Municipal life has now completely outrun its provisions and an extensive revision has become essential. One of the main results as the new system develops will be a further increase in the already great responsibilities of Municipal Boards, more especially in the large cities, and it is incumbent on members of these Boards to prepare for their responsibilities by the exercise of zeal in the public interest tempered by a careful consideration of facts and of administrative possibilities and by impartiality in dealing with the many questions which come before them, but more especially those connected with taxation.”

[Punjab.]

The Proceedings of the Lieutenant-Governor of the Punjab on the annual Administration reports of the Municipalities of that province for the year 1913-14 form very interesting reading. There are 104 Municipalities and 90 notified areas in this Province. Several of the Municipalities are apparently very small affairs. Some of them have populations considerably less than 5,000 and we see one Municipality with a population of less than 2,500. Considerable interest is shown in municipal elections, as many as 95·5 per cent of the voters taking part in a particular area, and the following words of the Lieutenant Governor show the right spirit and are calculated to instil more vigour into the administration of these towns: “On the whole,” says the Lieutenant-Governor, “he sees no reason to be pessimistic as to the progress of the elective system. Abuses are bound to occur, as they do in most countries possessing democratic institutions. His Honour, while sympathizing with the men of the old aristocratic school who at present stand disdainfully aloof, must

emphasise the fact that the system has come to stay and that all the citizens who have the welfare of the community at heart should accept it and endeavour to eradicate abuses gradually. There are indeed signs that a higher sense of civic duty is being developed."

It is interesting to note that the reason for the neglect of the Committee in one notified area situated in an out-of-the-way part of a district to meet regularly is set down to be that the official president has rarely found it possible to visit the place. The remedy proposed is to appoint a non-official president, though the local officials find it difficult to suggest a competent person for the post. Generally speaking, the question of substituting non-official for official office-bearers has been examined during the year and it has been found possible to appoint non-official presidents to a considerable number of Committees.

Octroi continues to be the most popular form of taxation, though in some cases an attempt is being made to substitute a terminal tax for octroi. Nearly 50% of the total receipts by taxation falls under the head of octroi. House tax and profession tax are intensely unpopular. This one fact is enough to show the wide difference between conditions in Madras and the Punjab. The question of imposing a sort of direct tax, called a *haisiyat* tax, varying with the means or circumstances of each taxpayer, is now under discussion.

The question of proper town-planning, town extensions and removal of congestion in cities is well to the fore. A class has been recently instituted for the training of Sanitary Inspectors and there is an earnest attempt to employ Health Officers and Sanitary Inspectors and make the most of them. Public health was on the whole good, in spite of severe attacks of plague in parts. It is refreshing to note that in Gujarat the non-officials gave very valuable assistance in combating the severe outbreak of cholera that took place there.

The progress of Self-Government appears on the whole to be distinctly encouraging in this Province under the wise guidance of His Honour the Lieutenant-Governor.

[**Central Provinces and Berar.**]

The report on the working of the Municipal Committees in the Central Provinces and Berar for the year 1913-14 is more or less a bald document without any special features worthy of comment. The attendance of members at meetings is reported to have been generally satisfactory. A special system of election is in force in this Province since 1908 under which one-third of the elected members of a municipal committee retire by rotation each year. But it is reported that the results of this system have not been altogether satisfactory, so much so that the Nagpur Municipal Committee desired to revert to the old system of general triennial elections. There appears, on the whole, to have existed a keen interest in elections, partly, it is alleged, with the view of influencing Legislative Council elections. The purity of the elections is not, however, free from reproach. The Commissioner of Berar observes "The conduct of elections leaves, I believe, a good deal to be desired.....In certain municipalities even if actual intimidation is not used, the weight of certain influence is such that voters are afraid to record their votes as they would wish."

Improvement of water-supply, drainage, roads, slaughter-houses and meat markets received considerable attention. The problem of dealing with congestion in, and consequent extension of, towns is now coming to the forefront and the Government have expressed their willingness to help the municipal committees undertaking schemes of this description with substantial grants. A new municipal Bill is now under consideration.

[**Assam.**]

The resolution of His Honour the Chief Commissioner of Assam on the annual reports on the working of Municipalities in Assam during the year 1913-14 opens with the statement that the year was characterised by a marked extension of

municipal government in the Surma valley, but after reading the resolution we are unable to say that municipal administration has been particularly noteworthy or successful in the province during the year under review. The municipal institutions of the province comprised twelve Municipalities under Bengal Act III of 1884, and two Municipalities, one station and three unions under Bengal Act V of 1876. Eight Municipalities elect their Commissioners and the Municipal Commissioners of Silchar for the first time exercised the privilege of electing their chairman. The number of ratepayers rose from 20,153 to 21,360, the population within the municipal limits being 125,552. The average incidence of taxation per head of population rose from Re. 1-10-0 to Re. 1-12-2, though the taxes in the new municipalities in the Surma valley were levied only for a portion of the year. The Chief Commissioner hopes that the increase is an indication that the municipalities are endeavouring to utilise their own resources to the utmost extent before applying for special assistance from Government.

The income from all sources amounted to Rs. 3,07,794 as against Rs. 2,74,705 during the previous year. It does not appear that any large improvements matured during the year, and the Government grants fell from Rs. 2,38,797 to Rs. 1,93,384. The total expenditure of the year, including repayment of loans, advances, etc., amounted to Rs. 5,21,255 as compared with Rs. 4,99,854 in the year 1912-13. The capital outlay and maintenance charges on account of water-supply amounted to Rs. 93,937. Wastage of municipal water, the bugbear of water engineers, necessitated meters to be attached to all private connections in Gauhati, and a grant of Rs. 11,060 was provided for the purpose from Provincial Funds.

The expenditure on conservancy rose from Rs. 1,14,515 to 1,33,194 but increased expenditure do not always mean increased efficiency, and we are afraid that the conservancy arrangements in most towns are still very defective.

The aggregate closing balances exceeded the opening balances by Rs. 33,755, evidently because no large works were

undertaken during the year. The maintenance of accounts seems to be far from satisfactory; sufficient attention is not paid to the instructions given in previous audit notes, and in a number of cases the collection accounts were badly kept, and a case of embezzlement was brought to light in the Goalpara Municipality; a more effective system of audit seems therefore necessary. On the whole, we are afraid we cannot say that municipal administration has been strikingly successful in Assam during 1913-14.

[Madras.]

The reports on the working of the Local Boards and Union Panchayats and of the Municipalities in the Madras Presidency for the year 1913-14 have been published. The administration on the whole has been satisfactory, a fair degree of efficiency having been attained in the majority of cases. During the year under review, there were 25 District Boards, 96 Taluk Boards, 394 Union Panchayats and 62 Municipalities. Only three Taluk Boards enjoyed the privilege of electing their own Presidents; 19 Taluk Boards had non-official Presidents nominated by Government. The question of increasing the number of nominated non-official Presidents is under the consideration of Government, but there is no intention to increase the number of elected Presidents of Taluk Boards.

In the case of the Municipalities, 61 had non-official Chairmen and 36 enjoyed the privilege of electing their own Chairmen. In all the Municipalities except 4, the elective system was in force. In 52 Municipalities, the system of ward elections prevails, while in the other 6 elections are held for the Municipality as a whole. It is understood that in accordance with the recommendations of the Royal Commission on Decentralisation, legislation for the amendment of the City and District Municipalities Acts has been taken on hand. The Administration Reports confine themselves to dull routine and do not give any indication of the aims of Government in regard to Local Self-Government or their opinion of the results so far achieved.

The local bodies had the direct administration of nearly 450 lakhs of rupees during the year under review inclusive of endowments. The average incidence of local fund taxation including tolls worked out at 3 annas 11 pies per head of population according to the census of 1911 : excluding tolls, it was 3 annas 4 pies; while the incidence of Municipal taxation was Re. 1-8-1 including tolls and Re. 1-3-5 excluding them. We are glad to observe that local bodies are devoting more attention to education and to public health and sanitation. The aggregate expenditure on education out of the local funds was Rs. 24,15,712; while out of the Municipal funds, the expenditure was Rs. 5,95,528 excluding Rs. 1,42,100 spent on school buildings. District Medical and Sanitary Officers and their assistants are in charge of the several districts and taluks. Qualified Health Officers are employed only in three Municipalities; six others have agreed to appoint qualified Health Officers. We would suggest that the appointment of a qualified Health Officer to supervise the Sanitary Staff be soon made compulsory in every Municipality. About three years ago, the Government of India sanctioned a scheme providing for the appointment of Health Officers of the first class for the larger Municipalities and of the second class for smaller towns, but the scheme has not yet been given effect to pending the settlement of the proportion in which the Government of India and the Local Government have to share the extra financial burden. We hope that the settlement will soon be arrived at and the scheme given effect to.

Large sums are being spent in the construction and maintenance of various drainage and water-supply systems, and hospitals and dispensaries. The medical training of women and the employment of midwives are receiving some attention, but the problem of infantile mortality has not yet been seriously approached.

Expenditure out of the local funds on communications amounted to nearly Rs. 65,57,562, while Rs. 7,39,348 was

spent out of the Municipal funds. Notwithstanding this expenditure, we cannot say that there was any marked improvement in the condition of the roads. The problem of road-making has not received that attention which it deserves in this country and we venture to suggest a conference of District and Municipal Engineers to discuss the practical aspects of the question.

The levying of a Railway cess is being considered by several District Boards. The subject is receiving large attention in view of the discussion on the District Board Railways at a recent meeting of the Local Legislative Council, and it is hoped that the Government will afford help to the District Boards in forming District Board Companies to work Joint Railway Lines. The question of providing the necessary capital for such companies is no doubt a difficult one, and the resources of the District Boards are too limited to provide for railway undertaking. But the Government may help them by granting loans as they do in the case of other undertakings, and there are other sources, such as endowed funds, devasthanams, etc., from which loans can be raised at a favourable rate of interest. In reviewing the administration of the District Boards in the Punjab, the Lieutenant-Governor observes: "The construction of these would lighten considerably the annual expenditure on construction and maintenance of roads, and in addition would develop a new source of income." We hope that a similar spirit of sympathy and co-operation will guide the policy of the Madras Government in the solution of this important question.

The Calcutta Improvement Trust.

Rehousing Scheme No. 1.

THE Trust undertook the erection of three blocks of buildings as an experiment in the fringe area of Ward No. 4. The buildings were designed to contain 14 shops and 238 rooms, each 12 feet by 12 feet with a 4 feet verandah in front and opening on to a central passage 7 feet

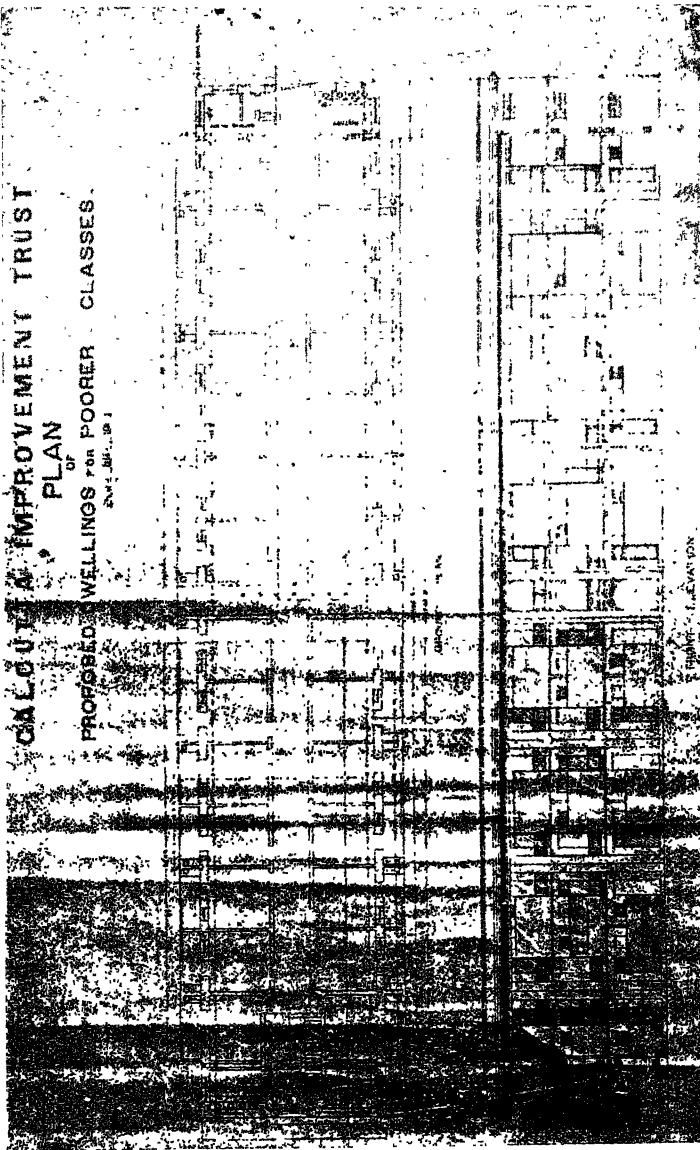
wide. The cost of the land works out at Rs. 832 a cottah; it is recognised in England that the working classes cannot be profitably housed on land costing more than £300 an acre or Rs. 75 a cottah. There will therefore be a loss on this experiment, and this was anticipated by the Board from the outset. It appears, however, that the buildings would show a fair return on capital if the rooms in the two upper storeys were let out at Rs. 6 a month, those on the ground floor at Rs. 5 a month and the shops at Rs. 10. The buildings are believed to be much cheaper than anything of the kind that has been erected in Calcutta before, the cost working out at only Rs. 0-2-8 per cubic feet, including water-supply, drainage, and kerbing and guttering, and there would apparently be no difficulty in filling the buildings with tenants of the Bengali middle class, if the whole buildings or the two upper floors of each block were exclusively reserved for their use. The Board, however, consider that it is most important to ascertain what rent can be paid, and what accommodation is required by the artisan and labouring classes. They have therefore decided to let the rooms at lower rates to artisans and labourers, and if the buildings once become popular, it will doubtless be possible to raise the rents at a later period. The experiment, however, seems already to show that excellent and sanitary accommodation suitable for the Bengali middle class or the poor Anglo-Indian can be erected to let at a profit at rents of Rs. 7 or Rs. 8 a room, and it is to be hoped that some enterprising capitalist will repeat the experiment.

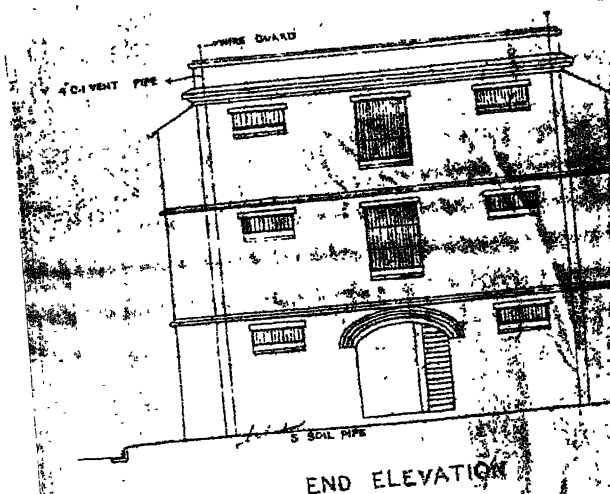
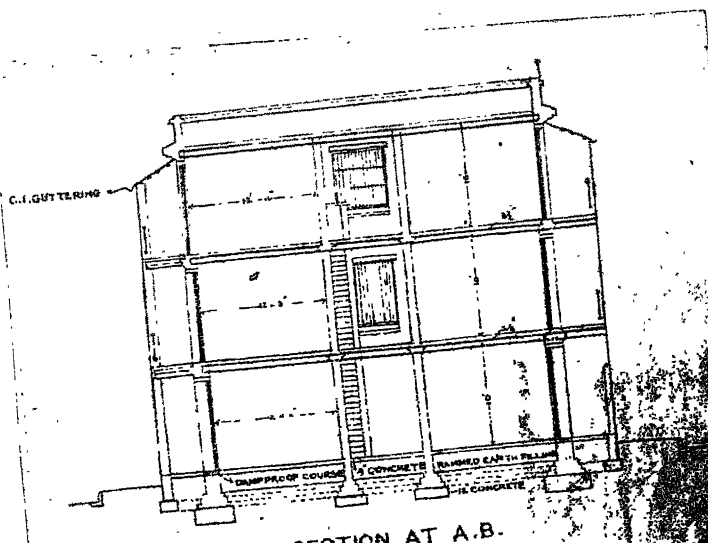
We are indebted to Mr. K. C. Bannerjee, Assistant Engineer-in-charge, for the following particulars regarding the scheme:—

1. Three blocks of buildings were constructed. Each block is divided by a 40 feet road which is kerbed and channelled and sewered.

2. The whole of the walls of the buildings are of brick, and all internal walls are reinforced with "H. B." Rein-

CALCUTTA IMPROVEMENT TRUST
PLAN
OF
PROPOSED DWELLINGS FOR POORER CLASSES.
2nd July 1911





3. The whole of the floors of the first and second floors, including roof, are of reinforced cement concrete (Expanded metal Reinforcement).

4. Separate bath rooms and lavatories for men and women are provided on each floor.

5. Each block will accommodate 420 persons.

6. METHOD OF CONSTRUCTION.—The outer walls are of brick in lime throughout over a base of lime concrete 1' 0" deep. The internal walls are reinforced with "H. B." reinforcement. The whole of the ground floors are formed of cement slabs 2" thick bedded in lime mortar, on well rammed and consolidated filling composed of earth, broken bats and cinders. The first and second floors are of reinforced concrete flooring finished with cement rendering, and the roof is of reinforced concrete. The whole of the outside walls are tuck pointed with cement and sand. The rough faces of the inside division and passage walls are brought up to a fair-face with sand plaster, which has been used only to fill inequalities in the walls and white washed.

7. Doors and windows and shutters are of "teakwood fixed to teakwood frames."

8. COSTS.—The total cost amounts to Rs. 1,68,612, including water-supply, drainage and kerbing and guttering, but excluding the cost of land. Owing to the enhancement of the award by the Tribunal, and costs incurred in consequence of the appeal, the acquisition of the land has actually cost Rs. 72,371 as against Rs. 58,000 originally estimated.

9. Letting rate to pay interest on capital.

In ground floor, 14 shops each at Rs. 5 per month.

In ground floor, 70 rooms each at Rs. 3 per month.

In upper floors, 168 rooms each at Rs. 4 per month

The total annual rent recoverable amounts to Rs. 11,928.

Water Works Distribution System.

Experience in Locating and Mapping Pipes and Valves in an Old Water Works System.

FOR the adequate control and effective operation of the distribution system of a municipal water-works, the location of pipes and valves should be definitely known, as well as the function performed by such pipes and valves. Data should be recorded in such a way as to be readily understood and interpreted, and should be accessible for immediate use, in case of an emergency, by more than one person. The more complex the system, the more important becomes definite and easily used recorded information as distinctive from information stored only in the minds of certain individuals.

For one reason or another, too much dependence has been placed upon the personal knowledge of individuals, or perhaps a single employé, and too little has been done upon the work of recording facts and data in such shape as to be of use by any person, incidentally extending thereby the usefulness of many persons.

The lack of proper records and plans may be felt in a minor degree as an everyday handicap, but is liable to be particularly emphasised in case of an accident, such as a break in a main pipe. Here the flow of water must be stopped, and the circulation readjusted so as to cause as little annoyance and inconvenience to consumers as possible. This means that a number of valves must be first found, and then operated in such a manner as to produce the desired results, and such work must be done quickly.

Of scarcely secondary importance is the necessity of similar records for service pipe connections from the mains in the streets to the properties of the consumers. Affiliated with these latter record are the data recording the arrangement of water piping inside buildings or private properties, with special reference to unauthorised outlets, or connections with a private, and possibly contaminated, water supply for fire or manufacturing purposes.—*American City.*

Draft Drainage Rules for the Benares Municipality.

WE reprint below the draft of certain rules which it is proposed to make for the Benares Municipality under the United Provinces Sewerage and Drainage Act, 1894. We consider the rules incomplete and would invite the attention of the authorities to the following points.

The materials and internal fittings and how they are to be put together should be definitely prescribed. More often than not, it happens that house owners, to save expense, adopt cheaper fittings, as a result of which the necessary connection to the sewer may not be made. Standards should be prescribed for the house owners to follow, and if after this the fittings, &c., are unsatisfactory, the blame will attach to the house owner and not to the Municipal Engineer. Again, before the house fittings are erected, it seems necessary that the owner should submit plans with specifications and obtain the Engineer's approval before starting work. The observance of these precautions will obviate a good deal of unpleasant work on the part of the municipal executive.

Another defect that we notice is that drains conveying other than latrine or urinal contents are permitted to be connected to existing surface drains. We fail to see the reason for this procedure in places where new sewers have been laid. It is an established fact that surface drains conveying sullage are among the most insanitary features, and their continuance for the conveyance of any sewage does not make for sanitation. We would therefore urge the insistence of all contents except rain water (a portion of this also may perhaps be included) being discharged into sewers.

Further, we are rather surprised to notice that while the Engineer is to be the final authority for all connections with new sewers, the Health Officer is to be the sanctioning and supervising officer for connections with old underground drains. This seems to us an obsolete practice to continue.

The latter connection requires as much of engineering knowledge and practice as the former. We do not disparage the Health Officer, but his *rolé* is purely sanitation on the medical side, whereas sanitary engineering which includes the works described above is entirely engineering, and nothing else. We would therefore suggest that all work connected with sewers—old or new—should be controlled by the Municipal Engineer.

The draft rules do not contain any reference to the exclusion of silt from sewers. We presume that as it is intended to convey all sullage water in open side drains, provision is made for the exclusion of silt at points where these surface drains are connected with the underground sewers. However that may be, it seems now to be accepted that surface drains are among the chief contributors to insanitary conditions, and we would strongly recommend their abolition as conveyors of “foul water.”

We consider that the rules need more amplification and definition and description of details, and would recommend to the authorities concerned a careful study of the excellent drainage bye-laws framed by Mr. J. W. Madeley, the Special Engineer for the City of Madras.

Draft Rules.

Under sections 33 (3) and (4) and 34 (1) of the Sewerage and Drainage Act, 1894.

1.—In these rules “board” means the municipal board of Benares; “engineer” means the municipal engineer and includes any other subordinate officer deputed by the engineer to act for him in any particular case;

“secretary” means the officer acting for the time being as secretary of the board.

2.—No connection of any house drain, privy, water-closet or urinal shall be made with the municipal sewer by any private person.

Connections with the sewerage system.

3.—Every owner or occupier of any premises who desires to connect his house drain, privy, water-closet or urinal with the

municipal sewer shall apply to the municipal secretary in the prescribed form, at the same time forwarding a preliminary estimating fee of Re. 1.

4.—Before any estimate is prepared the engineer will cause the premises to be inspected and will satisfy himself that the drain, privy, water-closet or urinal has been constructed on sanitary principles, and that the materials and internal fittings are of a suitable description.

5.—Every connected privy, water-closet or urinal shall be provided with adequate ventilation, which shall be effected by an opening or openings of not less than two square feet in area per seat in one of the external walls, as near the top of the wall as may be practicable, communicating directly with the open air and enclosed by wire netting.

6.—Every house yard drain must be laid with an adequate slope so that all liquid matter will flow off quickly, and it must be constructed of suitable materials, either stone or cement-plastered brickwork or glazed ware.

7.—Every seat of a connected privy, water-closet or urinal must be provided with a proper system of flushing to the satisfaction of the engineer.

8.—Every connected privy situated in a building must be separated from the kitchen and the inhabited rooms by aerial disconnection.

9.—The walls of every connected privy up to a height of at least three feet from the platform shall be constructed of well burnt bricks, cement-plastered, or surfaced with glazed tiles. In the case of urinals the height shall be five feet from the platform.

10.—In all cases where a connected privy or water-closet is more than one storey in height the arrangements for soil, pipe, flushing, ventilating, &c., shall be carried out according to the approved type plan of the municipal board or any other plan approved of by the municipal engineer.

11.—After the inspection of the engineer an estimate of the cost of such connection with the sewer will be furnished to the applicant, and he will be required to deposit within 30 days the whole amount of the estimated cost. Should the owner fail to

deposit the estimated amount within the period specified the papers will be filed. Should he at any future date decide to have the work done a fresh estimating fee will be necessary.

12.—The estimate will include such supervision charges as the board may deem necessary. Ordinarily this charge will not exceed 10 per cent. For estimates over Rs. 100, the estimating fee will be 1 per cent, provided that in calculating the estimating fee fractions of a rupee will be counted as a rupee, i.e., rupees 1-2-0 will be taken as rupees 2.

13.—On receipt of this amount the work will be taken in hand by the municipal engineering department.

14.—Every owner or occupier of any premises who desires to connect his house drain with the municipal surface drain shall apply to the secretary in the prescribed form as laid down in rule 3, and the procedure to be followed will be the same as that laid down in rules 11, 12 and 13.

15.—Drains connected with a municipal surface drain shall discharge ordinary house sullage such as bathing, washing and cooking water, and under no circumstances will latrine or urinal contents be allowed to discharge into such drains.

16.—Every owner or occupier of any premises who desires to connect his house drain or latrine with any municipal underground drain of old pattern, which, pending the introduction of the modern sewerage system, is being used for carrying sewage of all descriptions shall apply to the Health Officer for permission to make such connection.

17.—On permission being received from the Health Officer the applicant will make the connection under the supervision of the conservancy department, and the Health Officer will satisfy himself that the connection is properly made before allowing the drain to be brought into use.

18.—Rules 16 and 17 will not apply in the case of a connection with any improved old drain in the pakka mahals or other areas, as these drains will be treated for the purposes of connection as modern sewers and rules 2 to 13 will apply.

19.—Masonry latrines of private houses in unsewered areas shall be so constructed that all solids fall directly into a removable receptacle of metal or glazed ware fitting close beneath the seat, and that solids and liquids are effectually separated.

20.—The floor of every such latrine shall be constructed of impervious materials to the satisfaction of the engineer, and it shall have a proper slope to the drain for cleansing purposes. Rules 5, 8 and 9 for connected latrines will also apply to unconnected latrines.

21.—Private cesspools may be allowed where there is no public drain within 100 feet of the premises for which it is required.

22.—Cesspools must be constructed of well-burnt brickwork built with cement plaster, or of any other impervious material approved by the engineer.

23.—Every owner or occupier of any premises who desires to have a crossing over any municipal drain in order to gain access from his premises to the public road must apply to the secretary who will inform him as to the amount of the cost of such crossing, which amount being deposited by the applicant the work will be carried out by the engineering department of the municipality.

24.—The crossings will be made by cast iron crossing plates and stone sets, and no other description of crossing will be allowed except with the special sanction of the board.

25.—The iron crossings, although paid for by the applicant, will remain the property of the municipal board.

26.—On completion of any work done under rules 13, 14 and 23 the secretary shall furnish the owner with a statement of actual cost. Any unexpended balance shall be refunded. Any expenditure in excess over the estimated cost shall be paid for within one week, and in case of default the board shall be at liberty to disconnect the drain and to recover the cost, in accordance with section 41, Act III of 1894 (The Sewerage and Drainage Act).

27.—Every owner of a building or land situated in the municipality, whose ordinary residence is outside the municipality, or who,

being ordinarily resident within the municipality, is absent therefrom for sixty days or upwards, shall, if required to do so by the board, appoint, in the manner hereinafter set forth, a person ordinarily resident within the municipality to be his agent for all the purposes of the United Provinces Sewerage and Drainage Act, 1894, or any rule made thereunder.

28.—Every owner who is bound by rule 27 to appoint an agent shall intimate to the secretary of the board in writing the name of such agent, and when such agent shall have intimated to the secretary of the board in writing his willingness to serve, the owner shall be deemed to have complied with rule 27.

29.—The board may serve notices upon or demand payment of its dues from such agent instead of upon or from his principal, and the principal shall thereupon become liable as if the notice had been served upon, or the demand made from, him personally.

Under section 35 (1).

In exercise of the powers conferred by section 35 (1) of the Act it is hereby directed that any breach of the above rules shall, on conviction by a magistrate, be punishable with a fine which may extend to Rs. 50 (fifty rupees), and, when the breach is a continuing one, with a further fine which may extend to five rupees for every day after the first, during which the breach continues.

Municipal Legislation.

Method of realizing taxes under the District Municipalities Act.

ON account of the recommendations of the Decentralisation Commission, new Municipal Bills are under preparation in several provinces and the present time is therefore very opportune to point out the defects in the existing laws and to suggest improvements in the light of past experience. We publish below some notes sent to us by a Municipal Secretary regarding the Madras District Municipalities Act, and we invite other Municipal Secretaries and Municipal Councillors to send us their suggestions for publication.

The receipts of a Municipality can be divided into two classes—fixed demands and fluctuating demands. Under the former come the House and the Land taxes, together with water and drainage taxes, where they exist. These demands are fixed once in five years under section 66 (2) and in most cases continue unchanged unless altered by the Municipality on account of any improvement, &c., under section 73 (1) or on the motion of the house or land owner under section 69 B. It is hardly therefore necessary that a notice of demand should be sent to every house or land owner for each half-year, intimating to him the amount of tax that is due to the Municipality. No doubt the Act does not require it in every case except in the case where distraint is necessary (vide section 102). But the Government have prescribed this uniform course apparently for convenience. It would be interesting to note that in the case of Land Revenue Collections, which are as good fixed items of demand as House and Land Taxes in a Municipality, no notice is prescribed; in other words a land revenue paying ryot, be he a ryot of an interior village where civilization has not yet permeated, is expected to know his yearly dues to Government and expected to pay them to the monegar on his call, while a municipal tax-payer is required to be informed of his fixed liability, by means of a written notice every half-year. This involves a good deal of unnecessary clerical work and may with advantage be given up if opportunity is taken of the amendment by amending section 102.

2. In the case of non-payment of taxes within the time prescribed in the notice, a warrant has to issue in respect of every individual case. It would certainly facilitate business, if officers of certain status are empowered to distrain property, in the case of non-payment of taxes after a prescribed date, the responsibility of choosing officers being left to the individual councils.

3. While yet under the head of fixed items of demand, it is worth while examining the existing provisions of the Act

for the revision of assessments in these cases. Once a Municipality is constituted and taxation is introduced, all the houses and lands are brought on the registers for assessments. Enlargement of the existing houses, construction of new houses, &c., cannot escape increased assessment or new assessment as section 73 (1) provides for such cases and safeguards the interests of the Municipality. On the other hand, the rate-payers' interests are secured by section 73 (2) which provides for remission of tax, if the building has been demolished and section 69 (B) which enables him to move the Council for reduction of taxation in case the rental value of the property has gone down since the revision. It will thus be seen that both the interests of the Council and the rate-payer are secured by the provisions referred to above. While such is the case, where is the need for a quinquennial revision under section 66 (2)? It only means practically an enhancement of the taxation once in five years, though theoretically the enhancement is to be limited to cases where there has been an actual rise in the rental value. No officer who is deputed to the work of revising the House or Land Tax Register contents himself unless he has added at least 20 or 25 p. c. to the existing demand. At this rate, the taxation doubles itself in 20 or 25 years, although the working of the other sections noted above have been in operation to equalize the valuation concurrently. It will thus be seen that the effect of section 66 (2) is more harmful to the rate-payer and is properly speaking a surplusage.

4. FLUCTUATING ITEMS OF DEMAND: PROFESSION TAX.—The Municipal Councils, especially those at the headquarters of the District and at important sub-divisions, such as Kumbakonam, Negapatam, &c., seldom realize profession tax from Heads of Offices who are itinerating, as they furnish certificates to the effect that they did not exercise the profession for 60 days. It is needless to add that the deprivation of the revenue under this plea is unfair to the local bodies. It must be within the knowledge of every moffasalite that such

officers share a good portion of the attention of the municipality, by virtue of their position and that even during their absence from head-quarters, the members of their families enjoy the benefits of the municipal administration. But what is the return? They generally have no vested interest in the place and as such pay no House or Land Tax. They have conveyances and they of course pay taxes for these and save themselves the heavier burden of paying tolls every time they pass the toll-gate. They excuse themselves from paying profession tax, because they were touring: and yet they claim and enjoy better attention to their comforts. Is not this anomalous? It is therefore time now that Government should help the local bodies by making every officer who holds a salaried appointment to pay a Profession Tax on his salary provided he holds the appointment for 60 days, no matter if he is at head-quarters or not.

5. Again in the matter of collecting Profession Tax from officers, the Municipalities are left to help themselves. A volume of correspondence in the ill-manned and short-handed municipalities is inevitable in consequence of a number of arrangements made in a big office, like a District Collector's Office. The liability of those who have gone out on leave or who have been transferred has to be ascertained as also the liability of the acting or succeeding incumbents. In consequence of the change, the pay and allowances fluctuate and to fix the class under which a particular individual has to be taxed they have also to be ascertained. It would indeed be a boon if the heads of offices were required to remit to the municipal offices the Profession Tax collected from the officers who have exercised their profession for 60 days, in the succeeding month. A public body like the Municipal Council well deserves such a consideration as it is only analogous to the practice existing in the case of Income-tax collection from officers, where the tax is deducted from the pay and remitted to the Treasury to suit the convenience of Government.

6. ANIMAL AND VEHICLE TAXES.—The procedure prescribed for the realization of this revenue is contained in sections 80 to 84. It is doubtful if a C. Schedule is necessary to be served. The rates of license fees for several kinds of vehicles and animals are well known. In practice, these C. Schedules are seldom served except in the case of officials and respectable men who generally do not return them duly filled until the man entrusted with the collection calls on them times without number. It would therefore be well, if the Act was amended in such a way as to make the vehicle or animal liable to be seized after 15 days, as is prescribed in the case of carts, in case the tax is not paid.

7. PRIVATE SCAVENGING FEES.—Almost every administration report of the Municipalities contains an adverse comment on the subject of non-collection of these fees in advance. It therefore behoves us to examine if the procedure laid out is such as would admit of an advance collection. The elaborate procedure of preparing notices of demand, and the expiry of 15 days mentioned in the notice for action to be taken in default of payment, and the initial preparation of lists and their submission to office for the preparation of notices and bills well nigh consume a major portion of the quarter. In case of non-payment, distraint of property is impossible, unless the party has entered into a written agreement to accept scavenging service which is more or less forced upon him. In 90 *per cent* of cases such written consents are wanting and a distraint will therefore be illegal. It is therefore necessary to modify the Act in such a way as to make the acceptance of Private Scavenging service a matter of course and the collection of fees unencumbered with such a volume of circumlocutious procedure.

8. Before leaving the subject of collections, it is worth while to draw the attention of the authorities to the present method of collecting taxes.

The last consolidated audit report on the accounts of the District Municipalities (G. O. No. 2562 M. dated 22nd

December 1914) discloses a large number of embezzlements and this sets every one concerned a thinking if a change in the method of collecting revenue is not called for.

The Government, so far back as 1903, were alive to the grave evils of entrusting the collection of very large sums of money to very low paid servants (pay ranging from Rs. 8 to 12, or 15 in rare cases) and the consequent temptation on their part to misbehave and they advised the Councils to take steps to insist on the payment of taxes at the Municipal Office. (Vide G. O. No. 912 M. dated 2-7-1903.) The Municipal Councils have however not profited by the note of warning and pleaded for the continuance of the existing system, whose disadvantages were depicted very clearly by Government (Vide G. O. No. 571 M. dated 15-3-1904.) The suggested change no doubt has this disadvantage of making the rate-payer go to the Municipal Office for payment of taxes but when once he is accustomed to it, he will not feel it a hardship as he has the satisfaction of knowing that his dues have reached the proper destination. It is therefore timely now for all Councils, to join together and consider this all important question dispassionately and place this department of the Municipal administration beyond temptation and reproach.

Urban Electoral Areas with Special Reference to Erode.

[By T. SRINIVASA MUDALIAR, B.A., B.L., CHAIRMAN,
MUNICIPAL COUNCIL, ERODE.]

IN G. O. No. 133M. dated 29th January, 1915, the Government of Madras have been pleased to propose the granting of more extensive franchise to citizens of Municipalities which are to be divided into electoral areas called "wards". In the said G. O. the existing wards in towns are proposed to be retained. It is the purpose of this paper to suggest certain broad but definite principles on which to base the formation

of constituencies in Municipal areas by taking our own town as an object of study and criticism.

We must take it that it is not possible to create constituencies of equally representative character except where we have an equal number of voters in each area. Nor is it possible or even advisable to have universal suffrage until the citizens are sufficiently advanced in education and are able to realize the responsibilities of citizenship and suffrage. "Equal voting," says Mill, "is in principle wrong, because recognizing a wrong standard and exercising a bad influence on the voter's mind. It is not useful, but hurtful, that the constitution of the country should declare ignorance to be entitled to as much political power as knowledge". We have, therefore, to bear these fundamental principles in mind in discussing the subject of Ward formation in urban areas. The usual method in European countries is to form constituencies out of geographical districts especially where large areas are concerned. In Municipalities of our own province, though the original division seems to have been based on some such principle, the subsequent formation has been too anomalous and artificial to be fair or equitable. The groups in most cases were overgrown with exotics and excrescences and owing to want of timely weeding and pruning, have taken such ugly shapes as to serve no useful purpose. Constituencies ought to be formed on some definite principles like community of interest, common traditions, contiguity or geographical basis. Periodical revision and redistribution are also necessary in order to prune out all unseemly and unnecessary outgrowth affecting the original formation. This is highly essential in order that the constituents may take a real and genuine interest in the affairs of their particular division, which they will do only when it is a homogeneous whole of which they are conscious to be component parts. Unless the grouping is made with care and consideration with a view to evoke such interest among the constituents, there is the danger of degeneration setting

in. "Representative institutions," says Mill, "are of little value, and may be a mere instrument of tyranny or intrigue when the generality of electors are not sufficiently interested in their own Government to give their vote, or if they vote at all, do not bestow their suffrages on public grounds, but sell them for money, or vote at the beck of some one who has control over them, or whom for private reasons they desire to propitiate. Popular election as thus prescribed instead of a security against misgovernment is but an additional wheel in its machinery." The main object of every Municipal administration is the improvement of the general condition of life within its area. But unless each electoral ward is adequately and properly represented, the work of the administration will not be minimised much.

Let us now take a peep into the affairs of our town with regard to the principles now set forth. We will take the Fort first. That was the original town, complete in itself with its priests and peasants, artisans and oilmongers, with its common temples and originally, with its common fortification. Besides, on account of elevation it even bears a more agreeable atmosphere than say the suffocating air of the mercantile quarters. If you add to this the wholesome panchayats that are held occasionally in this locality under the auspices of an artful kaikola or a dominating Goundan, you have a complete body politic in this particular group. But if you add to this ancient community a host of shop keepers, traders, tinkers and oilmongers forming necessary adjuncts of an urban area but living purely in an industrial atmosphere, you introduce such exotic and inconsistent elements into a wholesome organism as will make common representation a matter of much difficulty.

We shall next take the Agraharam ward, as it stands at present. As the name itself indicates, this group suggests a sacerdotal domination within its environments. If the Fort was the ancient Acropolis of Erode, the Agraharam appears to have been a Colony of later origin formed after the construction

of the Kalingarayan Channel. Owing to its immediate vicinity to the all-important waterway, it enjoys a common convenience, though, when the channel is closed, it suffers from a common grievance. The leading men of this group are mostly priests and pleaders, so that it might well be termed the intellectual centre of Erode. The citizens of this group have many things in common affecting the amenities of their every day life. The delightful waterflow with the sacred trees on its bank satisfies the spiritual instincts of these citizens and brings them together on a common religious plane, though when it comes to their material welfare their leaders meet in the Court of Justice which is near by. To complete this body politic, there are the Keerakars and Valayakars on the one side, the pipers and the barbers on the other, acting ancillary to the intellectual aristocracy of Erode as purveyors of their personal comforts. So far, the formation and the growth of this group are natural and intelligible. But what passes beyond one's comprehension is to find such unseemly elements like the butchers in the far off bylanes, the Okkiliars that live outside the pale of the Agraharam and such other miscellaneous multitude as we find settled in the southern portion of the town tacked on to the Agraharam in the Municipal ward grouping. And when you add to the original community a host of promiscuous petty traders living on the other side of the Odai and leading a precarious life as is the case with occupants of unsightly huts in the vicinity of the Railway station, you introduce such distant and discordant elements into a harmonious whole as will make the group incongruous in the extreme. It will moreover be a far off cry from the Railway station to the Agraharam with absolutely no hope of reciprocal response. Such a division stands on no principle and representation under such conditions can neither be fair nor reasonable.

Let us then examine the conditions prevailing in the third group—the Karungalpalayam Ward. The main portion of this division is the village bearing the same name. It is a

suburb of the town proper, stands secluded and is a rural area in every respect. Its population is purely agricultural quite unlike the miscellaneous multitude of the town. The inhabitants are alike in their manners, dress and mode of life—quite rustic. They are self-centred and form a sort of village community with common worship and common festivals and occasionally resorting to their own forum. We have thus in this quiet agricultural area a homogeneous organism as contrasted with the heterogeneous motley crowd of the noisy town. How strange then to find this rural class pitched into the same fold as the Muhammadan Merchants of Brodie Street and the Oilmongers of Bhavani Road. This method of grouping can have no justification from any point of view either by way of community of interest, common traditions, contiguity or such other association.

In the formation of wards, the method usually observed seems to be to draw out circles, semicircles or curves simply with the object of collecting an approximately equal number of voters in each area. No notice is taken of the geographical situation, no thought bestowed on the vested interests, ancient traditions or other communal principles. The mainstay of modern Municipal towns are the industrial and mercantile classes. They are a growing class and form a guild of their own. And yet they have little chance of representation through the electoral area. If we give up the principle of circles and curves, we can easily form a constituency by grouping together the major portion of Lord Napier Street, the Bazaar Street, Brodie Street and a portion of Perundurai Road. This electoral area may take the shape of an octopus but it will cover within its fold the industrial and mercantile houses of this town.

Similarly, by removing the incongruous elements out of the existing wards, we can restore the original organisms to their healthy and harmonious forms. Out of the colony of miscellaneous entities that occupy the southern portion of the town, a separate ward can be formed. It may be asked

how when the number of elected Councillors is already fixed, the number of electoral areas can be increased. For this I would suggest that if the Government is not prepared to increase the number of Councillors, the representation may be redistributed according to the importance of the constituency or the numerical strength of the ward. For instance, the Agraharam group may have its two representatives as at present, whereas the cut down Karungalpalayam constituency, the newly created mercantile area and the miscellaneous group may have each one member. After such grouping, priests and pedagogues, merchants and Muhammadans will alike have equal opportunities of representation and there will be less cause to charge the much abused pleader with gaining ground over the warring elements in the wards. Erode can then have as its constituencies the Acropolis, the Agraharam the Rural commune, the mercantile area and miscellaneous group. Representation in such electoral areas will be fairer and more equitable.

Municipal Finance.

A novel idea for raising money at Lincoln.

At a recent meeting of the Education Committee of Lincoln, Mr. J. Richardson moved a resolution dealing with the most economical and profitable way of defraying the cost of public buildings. The notice was placed on the agenda in consequence of the committee having resolved to build a new school at a total cost of £4,000, and Mr. Richardson moved that instead of the requisite money for such a building being raised by an interest-bearing loan, the Corporation be asked to issue notes for the amount requisite, the notes to be legal tender for all purposes up to the value of the buildings while the latter were at their full value, and subsequently the notes should be cancelled from time to time according to the depreciation of the buildings, or until such time as the Corporation redeemed the whole or any part of the notes remaining in circulation out of the ordinary income of the Corporation.

Mr. W. Foster : Would the notes be legal?

Mr. Richardson : They would not be legal at present, but they are legal in many parts of the world.

Mr. A. Taylor seconded, and observed that it had always appeared to him to be strange that any business man engaged in trade and commerce should be prepared to accept the present system of usury as a settled part of society. The nation paid in the form of interest every year very nearly five hundred millions sterling, which was approximately one-fourth of the national produce of wealth, and that was a very heavy tribute, to which municipalities were paying a very considerable portion. It had been demonstrated beyond controversy, he contended, that the present system of gold currency was absolutely unsound. The £22,000 which Lincoln paid in charges on loans represented a rate of between 1s. 9d. and 1s. 10d.

Mr. A. W. Foster wished that Mr. Richardson had been 25 years younger, and he might have lived to see his ideas accomplished.

Ald. White suggested that the subject should be referred to a committee for consideration.

The resolution was put to the meeting and lost.

Notes.

[Assam.]

MUNICIPAL LEGISLATION.—We have reproduced the resolution of the Assam Government regarding the contemplated Municipal legislation for that province. The Chief Commissioner considers that the present law is inconvenient and obsolete and that the time has come for consolidating and bringing it up-to-date in the light of modern Municipal legislation. The main outlines of the proposed legislation are indicated in the Resolution and the Chief Commissioner is anxious to ascertain the views of the people of the province on the proposals put forward in the Resolu-

tion. We cordially appreciate the spirit in which His Honour the Chief Commissioner of Assam is taking the public into his confidence at this initial stage of legislation. In Madras though the new city Municipal Bill and the District Municipalities Bill have been drafted, they are "confidential" and the public have no opportunity of knowing the lines on which legislation will proceed and they are not likely to know anything until the Bills are formally published prior to introduction in the Legislative Council. In Bengal too in answer to an interpellation by the Hon'ble Rai Radha Charan Pal Bahadur, asking for particulars regarding the proposed amendment of the Calcutta Municipal Act, the Government of that province replied that they were not prepared to give any information at that stage regarding the proposal to amend the Act.

[Bengal.]

Calcutta Corporation.

WAR AND FINANCE.—On the motion of Mr. Shirley Tremearne, the Calcutta Corporation resolved to ask Government to sanction the withholding of the contribution from the Corporation to the City Improvement Trust until the termination of the present war and if necessary to legislate for the purpose. The orders of Government have not yet been issued.

DISCOVERY OF DEFECTS IN WATER PIPES.—The prevention of waste of Municipal water is one of the great problems engaging the attention of Municipalities. The Executive Engineer (Water Works) of the Calcutta Corporation made a proposal that in order to encourage the water Inspectors to make efforts to reduce the waste resulting from defective pipes, &c., a sum of Rs. 100 be offered in rewards each month for a period of six months. The proposal was considered and sanctioned at a recent meeting of the General Committee of the Corporation. The proposal is of course restricted to the work in connection with the mains and pipes and up to the stop-cocks and has no reference to wastage inside houses.

THE WAR AND OFFENSIVE TRADE.—It has been notified for general information that the Corporation of Calcutta have resolved that their previous resolution of the 25th November 1914 making a declaration under section 469 (3) of the Calcutta Municipal Act, prohibiting the use of any premises for the storing of hides, skins, hoofs, or horns or as a godown therefor in the areas specified therein after the 31st March 1915, be not given effect to until the conclusion of the war. Accordingly, the declaration published in the *Calcutta Gazette* of the 9th December 1914 is cancelled, subject to republication after the conclusion of the war.

[Bombay.]

The Bombay Corporation.

THE NEW PRESIDENT.—The term of office of the Hon'ble Sir Fazulbhoy Currimbhoy as the President of the Municipal Corporation of Bombay expired this month. It has been the practice of the Corporation to elect a new President every year. Only in one or two notable cases was the retiring President re-elected. Sir Fazulbhoy did not seek re-election and the Bombay newspapers announced that there were four candidates for the chair, viz., Mr. N. J. Gamudia, Mr. J. A. Wadia, Mr. Phiroze C. Sethna and Dr. N. H. E. Sukhia. Dr. Sukhia did not, however, stand for election, but the other three stand firm. The members of the Corporation found themselves in a very embarrassing position on the day of the election, as all the three candidates occupied a distinguished position as prominent citizens and business men and each one of them had distinguished himself in his own way in the service of the Corporation. The election took place on the 8th April 1915 and the result of the voting was that Mr. Sethna got 27 votes, Mr. Wadia 21 votes and Mr. Gamudia 19 votes. Mr. Sethna was declared elected. Mr. Sethna is about 50 years of age and his career as a Councillor commenced in the year 1907, and he particularly distinguished himself as a Member of the Standing Committee of which he was Chairman during 1911-12. We offer our congratulations to Mr. Sethna on his election to the high office.



MR. P. C. SETHNA, THE NEW PRESIDENT OF THE BOMBAY CORPORATION.

Mr. N. V. Mandlik has been elected Chairman of the Municipal Standing Committee for the current year. He entered the Corporation in 1904 and was elected to the Standing Committee in 1911 and has since then been one of its active members.

THE BOMBAY SANITARY INSTITUTE.—On the 30th March, 1915, Their Excellencies Lord and Lady Wellington performed the opening ceremony of the Bombay Sanitary Institute Building. The Building is one of the results of the Bombay Sanitary Association to keep before the public the importance of education in Sanitary Science as a measure for protecting them against disease and improving their surroundings.

The groundfloor will be in the occupation of King George V Anti-Tuberculosis League and the first floor will be utilised for the Institute, Library, Sanitary Museum and Lecture Hall.

The Bombay Sanitary Association was started in 1903 by Dr. J. A. Turner whose untiring work in the cause of public sanitation in the Bombay City is well known. We congratulate Dr. Turner on his good work.

BY-LAW RELATING TO OPEN SPACE.—The following by-law relating to open spaces abutting on rooms, etc., has been made by the Bombay Corporation and confirmed by H. E. the Governor in Council :—

“(1) Every person who shall undertake construction work on a building intended to be used as a dwelling shall cause the whole of at least one side of every room included in such work and intended for human habitation to abut—

Open spaces abutting
on rooms, etc.

on ‘an exterior or an interior open space of the width or dimensions, and fulfilling the conditions hereinafter prescribed for such open spaces, respectively, or on an open verandah opening on to such an exterior or interior open space as aforesaid.

(a) Every such exterior open space shall, subject as hereinafter provided, extend throughout the entire length or depth, as the case may be, of the building on the side on which such room so abuts, and shall, unless the same is a street, be maintained for the benefit of such building exclusively, and its minimum width shall be in accordance with the following scale, varying according to the variation (if any) in the height of such building where it immediately adjoins such open space, that is to say:—

Minimum width of open space throughout	Where height of building above the plinth does not exceed
5 feet.	22 feet.
6 „	33 „
7 „	44 „
8 „	55 „
9 „	66 „
10 „	66 „
where height exceeds	

Provided that this by-law shall not operate to prevent projections, from the face of the building, of other than inhabited rooms if such projections do not reduce the width of the open space to less than 2 feet.

Provided also that such exterior open space shall not be required to be extended as far as the street or open space on which the frontage of the building may abut."

Surat City Municipality.

The Surat Municipality has informed Government that it is agreeable to the proposal made by it that the salary of the Municipal Commissioner who might be appointed for the Municipality should be Rs. 1,000 per month rising to Rs. 1,200 by an annual increment of Rs. 100.

[Central Provinces.]

Damoh.

WATER WORKS.—The Municipal Committee of Damoh, in the Damoh District has applied, under Section 3, Sub-section 1, Clause (i) of the Local Authorities Loans Act, 1914, for a loan of Rs. 1,75,000 carrying interest at 4 per cent per annum, for the construction of Damoh water-works. The cost of the water-works as estimated by the Sanitary Engineer comes to Rs. 4,09,356 of which the Government gives a grant of Rs. 2,29,557. The Municipality will have to provide Rs. 1,79,799 of which Rs. 4,799 will be met from savings from the next taxes and the balance, *viz.*, Rs. 1,75,000 will be taken as a loan. The loan is required for a period of 20 years and will be repaid by half-yearly instalments of Rs. 6,397-4-9 each.

Gadarwara.

TERMINAL TAX.—In exercise of the powers conferred by Section 39, Sub-section (8), of the Central Provinces Municipal Act, 1903 (XVI of 1903), and with the previous sanction of the Governor-General in Council, the Chief Commissioner has been pleased to sanction the imposition by the Municipal Committee of Gadarwara, in the Narsinghpur District, of a tax to be known as the "Terminal Tax" under Section 35 (b) of the said Act, on imports and exports of goods by rail, and in exercise of the aforesaid powers and

with the previous sanction of the Governor-General in Council he is further pleased to sanction the following rules which have been framed by the Municipal Committee for the assessment of the said tax :—

The tax will come into force from the 1st April 1915.

1. On all goods imported or exported by rail a Terminal Tax shall be levied at the rates given below :—

- (i) *At one anna six pies per maund on each occasion.*—Cloth, ghee, *kirana*, dried fruits and leather.
- (ii) *At one anna per maund on each occasion.*—Sugar, sweetmeat, *pan*, tobacco, oils (other than kerosene), colours, dyes, *maniyari*, oilman's stores and cotton and *ruvi*.
- (iii) *At six pies per maund on each occasion.*—Cocoanuts, *gur*, metals (manufactured or unmanufactured), wire, thread and hide.
- (iv) *At three pies per maund on each occasion.*—Grain and oilseeds and all other goods and articles not mentioned in numbers (i) to (iii) above.

2. The following articles will be exempted from taxation :—

- (i) Goods the property in which is vested in Government.
- (ii) All separate consignments less than 15 seers in weight, whether imported or exported.
- (iii) All parcels imported or despatched through the Post Office.
- (iv) All personal luggage of railway passengers coming to or going out of the town.
- (v) Goods the property in which is vested in the Municipal Committee.
- (vi) Salt and stone, whether imported or exported,

[Madras.]

Chingleput.

LAND CESS.—The Chingleput District Board has resolved to raise the land cess from 1 anna to 1 anna 6 pies in the rupee subject to the following conditions :—

- (i) That not less than $\frac{1}{3}$ of the extra revenue realised shall be spent on village roads or cart tracks.

(ii) That the period of the tax shall be temporary with power to the District Board to revise their resolution at the end of it.

(iii) That as far as may be the money raised within any Taluk shall be spent on that Taluk.

Coimbatore District Board.

RAILWAY FINANCE.—In their Order No. 130L, dated the 3rd February 1915, Government intimated to the Board that they could not lend the money required for the construction of the Podanur—Polachi Railway and suggested that the Board might take at once the debenture loan of Rs. 5,00,000 from the Bank of Madras and either borrow the additional sum required from the same Bank on the security of the Government Securities held by the Board or obtain the additional sum required by selling out the necessary amount of the Government Securities. The Board resolved to take the loan of 5 lakhs from the Bank immediately. In view of the present price of Government paper, the Board has authorised the President to make the best terms for the securing the loan of such amount on the Government Securities held by the Board as may be required to meet its outstanding liabilities in the construction of the Podanur—Pollachi line and the anticipated expenditure thereon during the quarter ending 30th June, 1915.

Ootacamund Municipal Council.

MODEL COW-STALLS.—The Government has noted the application of the Council for an allotment of Rs. 38,500 for the construction of fifty model cow-stalls and ten dairy-rooms at Koddappamund, for consideration in connection with the distribution of the special grant for minor sanitary works for 1915-16.

The Municipal Council has expressed its willingness to contribute a fourth of the salary and allowance of a second-class Health-Office for the present.

Adoni Municipality.

The number of Councillors to be appointed by election has been raised from five to eight. [G. O. No. 36 dated 9th March 1915]

[Bihar and Orissa.]

Bhagalpur.

Babu Sukhraj Ray has made a donation of Rs. 30,000 to the Bhagalpur Municipality for purposes of public utility.

Muzaffarpur.

The Hon'ble Maharaja Bahadur Sir Rameswar Singh, K.C.I.E., of Darbhanga has contributed a further sum of Rs. 25,000 to the Muzaffarpur Municipality in aid of its water-works scheme.

[United Provinces.]

Lucknow.

The Municipal Board of Lucknow has applied for a loan of Rs. 1,35,000 from Government for widening a portion of the Aminabad Road and Jata Wali Gate. The loan carries interest at 4 per cent. per annum and is repayable in one year.

Allahabad.

The Municipal Board of Allahabad has, in supersession of existing rates, imposed the following tax in the Municipality of Allahabad with effect from the 1st day of April, 1915 :—

A tax on all persons carrying on the business of manufacturing bricks, pottery, earthenware, tiles and lime at the rates given below :—

Schedule of rates.

(a) Pakka bricks, payable in full annually in advance, Rs. 25 per lac or portion of a lac.

(b) Tiles, earthenware, per kiln for a period of one year, Rs. 4.

(c) Goodwyn lock or similar tiles, Re. 1 per thousand.

(d) Lime, payable in full annually in advance.

Manufacturing	..	Cubic feet.	but under	Cubic feet.	Amount
					RS. A. P.
„	..	5,885	„	11,770	25 0 0
„	..	11,770	„	23,540	50 0 0
„	..	23,540	„	29,450	100 0 0
„	..	29,450	„	58,850	125 0 0
„	..	58,850	„	88,275	250 0 0
„	..	88,275	„	1,17,700	325 0 0

Private firms manufacturing less than 5,000 maunds, Rs. 5 per 1,000 maunds or part thereof.

[Punjab]

Simla Municipality.

The revised octroi rates proposed to be levied in the Municipality of Simla from the 1st July 1915 have approved by His Honour the Lieutenant-Governor and are published in the Government Gazette.

DHARMSALA.—In exercise of the powers conferred by sections 12 and 14 (a) of the Punjab Municipal Act, III of 1911, the Lieutenant-Governor has been pleased to increase the number of members of the Dharmsala Municipal Committee in the Kaigra District from 9 to 10, of whom 6 shall be elected and 4 shall be appointed by the Local Government either by name or by official designation.

Statistical Information.

[Central Provinces.]

Statement showing the total number of Municipal Boards, District Councils and Local Boards having non-official Chairmen or Presidents.

Number of Boards.	Description of Boards.	Total number of Boards having non-official Chairmen or Presidents.	Remarks.
1	2	3	4
43	Municipal Committees in the Central Provinces ..	10	
13	Municipal Committees in Berar ..	2	
17	District Councils in the Central Provinces ..	11	
4	District Boards in Berar ..	..
60	Local Boards in the Central Provinces ..	1	
21	Taluk Boards in Berar ..	..

Statement showing the expenditure incurred from Local Funds on Village Sanitation, including Water-Supply, during the three years 1911-12, 1912-13 and 1913-14.

	1911-12.			1912-13.			1913-14.		
	Sanita- tion.	Water supply and water works.	Total.	Sanita- tion.	Water supply and water works.	Total.	Sanita- tion.	Water supply and water- works.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Ra.	Rs.
District funds in the Central Provinces.	2,154	24,731	26,885	2,168	34,905	37,073	2,243	(a) 68,081	70,324
Do. in Berar	43,465	14,003	57,468	34,961	19,093	54,054	25,001	(b) 40,178	65,179
Total.	45,619	38,734	84,353	37,129	53,998	91,127	27,244	1,08,259	1,35,503

Note:—(a) An allotment of Rs. 44,000 was given to District Funds in the Central Provinces, out of the Government of India's Sanitary grant, for the improvement of the water-supply in rural areas.

(b) Do Rs. 16,000 in Berar do.

Statement showing the expenditure incurred by Committees under the Village Sanitation Act on Sanitation during the three years 1910-11, 1911-12 and 1912-13.

—		1910-11.	1911-12.	1912-13.
		Rs.	Rs.	Rs.
Central Provinces ..		50,825	61,848	70,331
Berar ..		Nil.	8,556	44,210
Total ..		50,825	70,404	1,14,541

Statement showing the recurring and non-recurring grants received from the Government of India, since 1912, for Sanitation, and the allotments made therefrom by the Local Administration.

Year of account.	Receipts.	Expenditure.			Remarks.
	Imperial grants.	Amount sanctioned for sanitation in Rural areas.	Amount sanctioned for sanitation in Urban areas.	Total.	
	Rs.	Rs.	Rs.	Rs.	
1911-12 ..	(a) 4,00,000	..	..	..
1912-13 ..	(a) 10,00,000	..	2,57,408	2,57,408	
1913-14 ..	(b) 3,00,000	60,000	1,90,607	2,50,607	
Total ..	17,00,000	60,000	4,58,015	5,14,015	

(a) Non-recurring.

(b) Recurring.

The unallotted balance on the 31st March 1914 was Rs. 11,85,985.

The amount provided in the budget of 1914-15 was Rs. 8,50,000.

Public Health and Sanitation.

Royal Sanitary Institute Lectures.

THE Royal Sanitary Institute has arranged a comprehensive course of lectures for Sanitary Officers, Health Visitors, School Nurses and Teachers. It is urged that these training courses are of particular interest at the present time when so many educated women are being appointed on the staff of Public Health Authorities and the

demand for trained women appears to be increasing. Twenty-one lectures for Sanitary Officers have been arranged on the following subjects:—Public health statutes, orders, memoranda and model bye-laws of the Local Government Board and the bye-laws in force in the administrative County of London; the practical duties of a sanitary inspector, e.g., drawing up notices as to sanitary defects, drain testing, disinfection, methods of inspection, note-taking, reporting, and elementary statistics, taking of samples of water, food and drugs for analysis; Municipal hygiene including prevention and abatement of nuisances, sanitary defects in and about buildings and their remedies, watersupplies, sanitary appliances, drainage, refuse removal and disposal, offensive trades, disinfection, building construction in its sanitary relations, local physical conditions, measurement and drawing plans to scale. Inspections and demonstrations are being arranged in connection with the lectures. Seven lectures are also to be given on meat and food inspection; including the taking of samples of water, food and drugs for analysis. Practical demonstrations will be given. Special lectures to assist school lectures and other students entering for the examinations in school hygiene, including elementary physiology, and for women Health Visitors, Tuberculosis Visitors, and School Nurses have likewise been arranged. Full particulars can be obtained from Mr. E. White Wallis, the Secretary, at 90, Buckingham Palace Road, London S. W.

Women and Town Improvement.*

Until very recent years men were looked to for the wisdom and energy to remedy every social and civic ill under the sun, and men have done nobly in some particular lines, but men are not natural-born house-keepers.

It is in the field of municipal house keeping that they are looking to the new citizen, woman, for assistance. I say "new citizen" advisedly. The idea that one must be born a male and then live to the age of twenty-one years before

* Maud van Buren in the *American City*.

becoming a citizen of these United States, was long ago exploded. True citizenship does not necessarily grow out of the right to vote. One calls to mind many voters—yea, an army of them,—who are far from being loyal citizens and, on the other hand, one recalls with pride and gratitude a host of women, not all suffragists by any means, who are serving their country well in many fields. Service, intelligent service, is the key-note of good citizenship. Without it no mere resident of a community, whether man or woman, is worthy to be called a citizen. Women are awake to this fact to-day as never before. With no lack of service to the home and family, they are giving of themselves to the larger home, the more numerous family of the community. They are interesting themselves in "civics," a term that has come to include, in the minds of many, almost the entire field of sociology and economics.

Beginners in any field are bound to make mistakes. The mistake that is being made by these new civic workers in many communities is over-indulgence. In our eagerness to improve local conditions, we "bite off more than we can chew," to use a homely expression. We leap before we look, and undertakings that seemed sensible and good must too often be dropped when little more than begun, because of too full a programme or ignorance of local conditions and local law. It is well before undertaking any civic work to make the acquaintance of the city council or village board and any men's organisations that may exist for civic advancement, to learn of their objects and aims and to co-operate closely with them in order that there may be no useless duplication of effort and expense—in order, too, to create community, sympathy and unity of purpose. Team work among all civic organisations, men's and women's, promises a measure of success that cannot obtain among kindred organisations each working independently of the other.

The wise woman, before undertaking any civic work, acquaints herself with the local ordinances and acquires an

understanding of the city budget. With the present ignorance of the masses, men and women, of either ordinances or budget, it is no wonder that even in the veriest village prevention of social or sanitary ills is receiving one dollar of the public funds where cures or poor relief are getting ten. The woman who looks into these matters and makes a comparison of the expenditures of the health and sanitation departments of her city with the expenditures for the police department, for example, and the expenditures for the paving of streets, finds cause for amazement, if not alarm.

Intelligent service along civic lines, whether for health, mortality or beautification, means first of all, then, intelligent insight into the laws governing the community and the distribution of public funds as well as the needs of the community that are evident on the surface. Not all of the phases of civic work under the sun can be accomplished in any one community in a given time. The secret of success is to choose from the many the most urgent need, and then with abundant faith and the courage of strong conviction "go hard after it".

Road Making and Maintenance.

Construction of Roads.

IT has already been emphasized that the one who is responsible for the construction of roads, has practically the making or marring of a good thoroughfare. This being so, it will be as well to consider briefly the lines along which the modern principles have been evolved. Roman roads should be mentioned at the outset. They were made on the most lavish scale, having practically all the more important features of recent construction, such as good foundations, solid cores, and paved surfaces. They were built primarily for military purposes, and when the Roman Empire declined, they were neglected and left to decay.

Modern people, even now, can learn one great and important lesson from these ancient works, namely, that it is far more economical to construct substantial roads in the first place, than to build flimsy ones, which continually require repatching, for the sake of keeping down the initial outlay.

After the lapse of time the Roman methods were forgotten, and when next the art was taken up seriously, viz., in the nineteenth century, roads were made with no prepared foundation and with simply a pile of stones placed in the middle of the trackway. This caused the cross-section to be very convex, with the result that vehicles kept to the centre and consequently wore the stones down in one long line.

This error of construction is often met with even now, more especially in villages.

Next come the two chief principles upon which the whole of modern road construction has been founded. The first was due to Macadam. He advocated the use of stones broken to sizes that on compression would more or less fit into one another, thus forming a compact mass. He provided no foundation, contending that by having a comparatively yielding sub-layer, internal attrition was reduced to a minimum. This was a fundamental error which was quickly recognised by Telford, an engineer to whom the second principle is due. Telford advocated a solid and unyielding foundation made by hand-pitched stones, varying in depth from 9 inches at the centre of the road to 5 inches at the edges. On the top of these he placed a 6-inch layer of broken stones capable of passing through a 2½-inch ring. Finally, the surface was formed by a layer of sand or gravel evenly distributed over the whole.

In considering modern methods of construction, it must be borne in mind that the conditions which must now be fulfilled are many. For instance, in Telford's time, the surface of the roadways had only to provide sufficient foothold for horses; now, besides this, the demand is for surfaces

suitable for motor traffic, the two not being at all reconcilable. Then again, motor traffic itself demands close attention, as various types from the light pleasure car, with pneumatic tyres, to the heaviest lorry with solid tyres—all require consideration.

The first fundamental fact, which everybody connected with the construction of roads should learn, is that the foundations should be of the best. This means money, but it is money well invested. Because of being covered up and buried so that the "result" of the expenditure is not actually in evidence, it is thought, to a large extent, that they are unnecessary. No worse dogma could ever have been put forward. Take, for instance, a new road that is to be constructed for general traffic, the foundations are skimped; the finishing surface is most elaborately done with the latest and most up-to-date binding materials; the job is completed and looks admirable. Now along comes a heavy traction engine or motor lorry, and what is the result? Practically the ruination of the road, besides perhaps doing harm to the hauling machine, by over-straining some vital part. It may be contended that the road was not designed for this traffic. Perhaps not, but being a public way, who can say no to the passage of these vehicles?

Foundations, then, are of paramount importance. After the necessary excavation of the site has been completed, a light roller should be sent over the ground in order to consolidate the earth itself upon which the large, hand-picked stones, composing the foundation proper, are to be placed. Over these a layer of 2 to 3 inches of top metalling should be spread (stones of about $2\frac{1}{2}$ -inch ring) being again rolled with a light roller. This second roller makes the individual stones take up their permanent places. Once a stone composing this top-metalling has been fixed, it should remain so, and this is only possible if the layer underneath is practically immovable. Another layer of about the same thickness as the above is now ready to be put on with another

run over with light roller. If it is desired, this latter 3 inches of metalling may have a certain amount of tar with it and then rolled. This makes an excellent bed for the finishing layer of fine material; in fact, this layer can be considerably reduced in thickness by so doing.

Roads paved with setts or wood blocks require just as much attention to their foundations as the above Telford type of road. Modern practice is to make them of Portland cement concrete 9 to 12 inches in thickness, the surface of which is trowelled so as to be as uniform as possible. The setts or wooden blocks are then placed in position and grouted in with cement and sand. In order to make a water-tight job, some engineers advocate the spreading of liquid tar over the concrete bed, or dipping the setts or blocks into liquid tar before being placed in position.

It is not proposed to discuss here in any further detail the actual making of roads, but the following may be taken as applicable to construction in general.

The cross-sections must be such that the drainage of water in the margins is properly fulfilled. The flatter the longitudinal gradient is, the steeper must be the camber, and *vice versa*. It is advisable on very steep longitudinal gradients to arrange, if the road is of the Telford macadam type, a double set of setts in the shape of an arrow pointing up the hill, at intervals. This reduces the chances of the materials being washed bodily away, by the setts providing a channel for the water to get easily to the gutters.

Surfaces should wear evenly, thus preserving the correct contour of the road, mitigating the noise of the traffic. Some surfaces when wetted become slippery to a very dangerous degree. All such should be kept as clean as possible, by constant washing. The main streets of London surfaced with asphalté sin badly in this respect, in fact, it is becoming quite an art to dodge the motor-'buses and taxi-cabs on wet days.

In concluding this part of the subject, it must be emphasized that whatever kind of construction is adopted, only skilled labour should be employed. In former years, and it is not too much to say, in many cases of the present time, local authorities think that the men who have become too old for any other kind of work, can be conveniently taken on to mend the roads.*

Heavy Motors and the Roads.

In view of the complaints what have been made as to damage caused to roads by certain classes of heavy motors and locomotives, the President of the Local Government Board has appointed a small expert committee to inquire into the sufficiency of the existing requirements with respect to the construction of these vehicles including weights on wheels, width of tyres, diameters of wheels, etc. Mr. E. Shortt, K.C., M.P., has been appointed Chairman of the committee.

Electric Lighting.

The Half Watt Lamp.

AN important event in January was the introduction of a metallic-filament lamp of remarkable efficiency, giving two thousand candles per watt, a result previously unattained except by the most efficient arc lamps. Specimen lamps had been exhibited in London some months previously, but they now came on the market in quantity. As they could not be made for less than 1,000 watts (2,000-candle-power) at the customary pressures of supply, or 600 candle-power at 50 volts pressure, they were suitable only for illuminating streets or large halls or shops, thus competing with the arc lamp, and were inapplicable to ordinary in-door lighting. This was, however, a fortunate circumstance, for the sudden introduction of a lamp of so high an efficiency, and suitable for domestic and similar purposes, would have had highly detrimental effects upon the business of electricity supply—much worse

* H. E. Lance Martin in the *Town Planning Review*.

than those experienced when the tungsten lamp was first brought out—although of course, in the long run, the industry would benefit by it.

That the small lamps will eventually come can hardly be doubted, but it is to be hoped that the change will be gradual. The improved efficiency is due to the very high temperature of the filament—so high that the substance of the filament would evaporate too rapidly to permit of a long life if the lamp bulb were completely evacuated, as in the ordinary lamps. Nitrogen gas is therefore admitted into the bulb at a pressure somewhat below that of the atmosphere, and by its presence checks the evaporation. At the same time, unfortunately it cools the filament to some extent and thus prevents the advantage of high temperature from being reaped to the full; but the reduction of consumption from $1\frac{1}{4}$ watts per candle to $\frac{1}{2}$ watt is, nevertheless, an enormous stride; moreover, the connection currents in the gas carry the slight amount of tungstic oxide that is given off to the colder upper parts of the bulb, where it is condensed, and thus the glass bulb remains untarnished throughout the life of the lamp, and the full initial candle-power is maintained. The guaranteed life of the $\frac{1}{2}$ watt lamp is 1,000 hours, but in practice it is found that the average life is about 50% longer. The intense brilliancy of the filament, which is concentrated into a very small volume, renders it necessary to use diffusing globes and consequently the new lamp was accompanied by a crop of special globes and reflectors; the concentration of the source of light facilitates the design of highly efficient reflectors and prismatic globes, and thus led to a very marked improvement in these accessories. The special qualities of the lamp have also rendered it admirably adapted to the system of indirect lighting by reflection from the ceiling and walls, which has thus experienced a great increase in popularity.

Water Supply.

The cleaning of water-mains.

IT is interesting to note the slow and gradual development of methods for cleaning water-mains. The development has been slow but the adoption has been slower. However, the number of water authorities who are making use of the method is increasing, and the method itself is being perfected. The chief reason why the scraping of mains has not been more generally adopted is that it has been considered too expensive for application. When this is the case the chief reason is to be found in the fact that mains have not been laid with hatch-boxes or facilities for cleaning, and the cost and trouble of inserting the scraper therefore becomes a serious matter. Where, however, the mains have once been scraped and provision made for subsequent cleaning, the cost of the periodical scraping is not great. Where the alternative is to lay a new system of pipes it is sufficiently evident that the outlay on cleaning must, under most conditions, be well worthwhile, and that is ignorance of the merits of the process rather than its cost or difficulty, which is the chief reason why it is not more readily adopted—for the cost of cleaning must be great indeed if it is comparable to that of laying a new main.

Without quoting figures available from the many cases of which records have been kept, it is certain that the cost of severing a main in a few places and of employing a few workmen with the necessary appliances for a few days cannot possibly equal the cost of the pipe-line. On the contrary, the cost of cleaning can be only a fraction of the cost of the pipe. Machines used for the purpose are of several kinds. First there is the scraper which is pulled through the pipe, generally used for small mains; then there is the machine which is driven forward through the main by the pressure of the water; and recently the turbine machine has been used. In the last-mentioned case the water pressure forces the machine through the pipe, and causes cutters in front of the machine to revolve.

The efficiency of such a machine depends to a great extent upon the water pressure. The possibilities of useful working, especially at the top end of a main near reservoir, might possibly be increased by the use of a pump. The improvement in principle is clear, and is an interesting step in the development of methods of main cleaning.

Uttarpara Water Supply Scheme.

In pursuance of section 37F of the Bengal Municipal Act, 1884 (Bengal Act III of 1884), it has been notified for general information that the scheme submitted by the Commissioners of the Uttarpara Municipality for providing a water-supply to that Municipality has been approved by the Governor in Council, and that the particulars of the said scheme are as follows:—

(a) The scheme is designed to supply 100,000 gallons of filtered water a day to a population of 7,400. The source of supply is the river Hooghly from which it will be pumped to an unfiltered water tank. From the tank the water will gravitate through two mechanical filters to the clear-water reservoir which will be in two parts and will hold altogether about 25,000 gallons. From this reservoir, again, the water will be pumped into an elevated reservoir built over the unfiltered water tank, whence it is to be distributed to the town.

(b) The estimated cost of the scheme is Rs. 1,30,546.

(c) The estimated cost of maintenance is Rs. 7,000.

(d) The sum of Rs. 1,30,546 on account of the cost of the scheme will be met as follows:—

	Rs.
Donation received	40,000
Further expected donation	11,700
Grant from Government	44,815
Loan from Government	25,000
Interest on money in Bank	2,796

	Rs.
Contribution from General Municipal Fund	4,881
Loan from Latrine Fund ...	870
Loan from Hackney Carriage Fund ...	484
<hr/>	
Total ...	1,30,546
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The annual charge of Rs. 7,000 on account of maintenance will be met from the water-rate and that of Rs. 1,828 on account of the repayment of the loan of Rs. 25,000 will be met from the General Fund.

(e) A loan of Rs. 25,000, bearing interest at 4 per cent, per annum, will be taken by the Municipality from Government to meet the cost of the scheme. It will be repaid by forty half-yearly instalments of Rs. 914 each; twenty years will be required to repay it.

(f) The total annual charge on account of the maintenance of the scheme is estimated at Rs. 7,000 and that on account of the repayment of the loan of Rs. 25,000 is Rs. 1,828. The former will be met from the proceeds from the water-rate and the latter will be met from the General Fund.

(g) The water-rate will be levied at the rate of 6 per cent. on the value of holdings.

(h) The average incidence of the water-rate per head of present population of the said Municipality will be Re. 0-15-7. [Not. No. 806M. dated 26-3-1915.]

Sewers and Sewage disposal.

A Report on Sewage Disposal.

THE Grand Rapids Association of Commerce, through its Special Committee on Sewage disposal, has just concluded an exhaustive investigation of the disposition of sewage in Grand Rapids as it relates to the pollution of public

streams and the consequent menace to public health. The report of the committee is of high value, and a brief synopsis follows :—

Chapter I contains a description of the present sewage removal plant, which is adequate as a removal plant, but emphasizes the fact that a *removal* plant is not a *disposal* plant. Chapter II discusses the terms of the Supreme Court decree in which the city of Grand Rapids is adjudged to be “causing and creating a nuisance” to owners of riparian property and to certain municipalities further down the river by allowing the daily discharge into the Grand River of approximately twelve million gallons of raw domestic and manufacturing sewage, and in which the city is required to abate such nuisance. The decree leaves the city to its own resources in choosing the manner of its abatement, but a time limit is set, after which it is decreed to cease using the river as a dumping ground for raw municipal sewage. Chapter III entitled “THE BATTLE OF THE MICROBES” points out how in a disposal plant the microbes destroy each other in the relentless warfare therein waged, and how a complete transformation of the sewage takes place through the process. Chapter IV refers to the bibliography on the treatment of the sewage which is appended to the report; Chapter V is a “Classification of Methods on Sewage Disposal”, Chapter VI describes the “Imhoff and Intermittent Sprinkling systems,” Chap. VII is entitled “Modern Irrigation Sewage Farming,” Chap. VIII takes up the subject of the cost of a Disposal Plant, and Chap. IX contains the conclusions of the Committee. The five conclusions are here quoted in full :—

1. Employ an experienced sanitary engineer to study topography, gather statistics on local conditions and requirements, then to design and, probably later, to superintend the installation of a sewage disposal plant; estimate its cost and tell us what it will do when in operation, and whether any profit can be recovered from its by-products.

2. Have him investigate and report on the feasibility of working out a plan of sewage irrigation farming as a means of recoupment for the heavy installation expenses of a disposal plant. We believe from what we have been able to find that if such a proposition can be worked out practically, it presents the most likely method of recouping anything commercially for the heavy initial construction and future maintenance cost.

3. The State should assist the city of Grand Rapids financially, if constitutional provisions are not in the way, in this necessarily experimental work in view of the compulsory decree and the Provisions of Act No. 98 of the Public Acts of Michigan, 1913, which provides for the "supervision and control by the State Board of Health over water works systems and sewage disposal systems, and providing for the appointment, duties, salary and expenses of a state sanitary engineer, and providing penalties and defining liabilities for violation of this Act."

4. A disposal plant that is cheap in the beginning is not necessarily the most economical or feasible to install. High operation expense, lack of permanent efficiency and unsatisfactory results calling for its replacement in a few years, would more likely follow a low initial cost of a make-shift device, and be the most expensive in the end.

5. It ought to be considered feasible to work out a plan whereby a sewage disposal plant for Grand Rapids, which we are practically decreed by an order of the court to construct, may be for all practical purposes used as a state experimental station on sewage disposal, and the experience we would acquire would then be available for the benefit of other cities of Michigan, which will in all probability be required by law to take similar action and render their problems less expensive and greater certainties from the outset. Co-operation along these lines by the State Board of Health, together with financial aid from the state, should be secured and made of value and service to the cities of the state on this most

important and very expensive municipal requirement, which the development of modern science show are indispensable to the most approved sanitary living conditions in cities and which demand the purity of our natural waterways.—*The Amer. City.*

Town Planning.

The Housing Problem.

BY J. S. NETTLEFOLD, J. P.

STRONG economic incentive is more effective for reform than official regulations. To ensure good housing it must be profitable to the owner, and bad housing unprofitable. The same holds good with cities and their development.

The main objective of town-planners must be to provide healthy living and working conditions for all classes, especially the poor. The first necessity is adequate supply of light and air. This means larger building sites at the old prices. There is a constant definite proportion between ground and rent and total rent. On small house property ground rent equals one-sixth of whole. Cost of site is composed of (1) interest on capital; (2) price of land; (3) cost of development.

(1) **INTEREST ON CAPITAL.**—This is of prime importance. Every 1 per cent capital represents about 1s. per week on each small house; hence the necessity for cheap capital, which is unobtainable unless the town-planning scheme is commercially sound.

(2) **PRICE OF LAND.**—The supply of land available for building is severely limited by the fact that communication is not provided by public bodies except to developed areas, and builders are only willing to build near to such communications. In the vicinity of all centres there is land of low value, due to lack of communication.

Town-planners must increase supply of building land by opening up cheap land, and at the same time restricting building density, thereby preventing undue rises in land values. The value of land is governed by its use. Landowners should be met by allowing economical estate development and encouraging quick development, and should be given economic incentive to develop by rating land on selling price, not merely on present income. Overcrowding should be avoided by restricting building density, and, in justice to landowners, assessors must recognize that restriction of building density reduces land values. Main arteries should be cut, opening up new districts through back land avoiding purchase of costly frontages. Sufficient width should be allowed between forecourts, but only a small width of macadam should be laid completing with tree planted grass margins and inexpensive pathways. Under common sense town-planning building density is calculated per gross acre, and therefore it will not cost landowners anything to give the land for these roads; it will pay them to contribute handsomely towards the cost of construction.

(3) COST OF DEVELOPMENT.—Cheap land is no good without rational development. Necessities must be provided before luxuries are considered. Light and air are more important to health, and much cheaper than magnificent architecture and extravagant engineering in the way of unnecessary sewers, kerbs, and gutters. The main objective of those primarily responsible for the 1909 Act was to reduce cost of town and estate development. Most town-planning schemes since published increase this charge instead of diminishing it. Unless care is taken town-planning will result in worse living conditions instead of better—vide Paris and Berlin. Extravagant development raises rents and makes decent living conditions economically impossible except for the favoured few. Harmony can be achieved without reckless expenditure. The city beautiful is of no practical use unless it be also a city of common sense, providing healthy homes for all classes.

Loss of Prof. Geddes' Exhibition.

We have already referred to the great loss of Prof. Geddes' Exhibition on the *Clan Grant*. It is estimated that at least Rs. 15,000 will be required on Prof. Geddes' return to England to enable him to work up the new exhibition into something approaching the completion of the old one. The emergency committee which was formed under the chairmanship of Mr. Lanchester to provide a substitute exhibition succeeded in preparing and despatching a complete though somewhat summarised exhibition, on the lines of the Professor's original one. An appeal for funds has been issued by Mr. John Burns, the President of the Cities and Town Planning Exhibition Committee. Subscriptions to the fund should be sent to the Hon. Treasurer, John Ross, C. A., 3 St. Helens' Place, E. C.

Town Planning and Rational Building.

In view of the letter from Mrs. Geddes last month the following excerpts from an interview with Professor Patrick Geddes, appearing in the *Statesman* of Calcutta will be of special interest to our readers. The Professor went to India at the suggestion of Lord Pentland, the Governor of Madras, to give the Government of the Southern Presidency the benefit of his views in connection with the development of its cities. To the interviewer he said that "the best way to plan a town is to encourage the highest tendencies of its people and its institutions."

On the subject of Haussmann and the ideal for which he stood, Professor Geddes was highly emphatic.

"The cities where unrest prevails," he said, "are always the cities which have been planned out on a too artificial basis—that is to say where the health, morals and comfort of the people have been sacrificed, either to the greed of the speculative builder, or to the vanity of the Haussmanns, the Stubbens, and the autocrats who have given them *carte blanche* in the carrying out of their ideas.

“ Look at what happened in Paris between 1852 and 1780. Look at what is happening in Berlin and Cologne to-day. Under Napoleon Haussmann created a beautiful Paris—but how? By driving magnificent roads through it and erecting stately buildings, after a ruthless demolition of existing dwellings, dishousing their inmates and aggravating the evils of overcrowding. These measures led to an increase in rents and land values and to an orgy of speculation in land. The net result was to increase the amenities of Paris for the rich and to aggravate the sufferings of the poor. The effect of this was seen when the French armies were defeated and the Empire collapsed; above all in the Commune.

“ Exactly the same thing is happening in Germany to-day, many good examples though it has also given us. In Cologne town-planning of the wrong kind has led to such a frenzy of land speculation that land is no more spoken of as such, but is too often referred to by the brazen title of ‘speculation object!’ One must admit that the Germans have a certain amount of honesty. The Cologners openly speak of land as they think it, as a ‘speculation object’ merely. In Canada exactly the same kind of operations is going on, but there the name given to them is ‘progress’!

“ As for Berlin, that is too largely a metropolis of sham town-planning. It is a capital abounding in sham magnificence and real squalor. You have broad boulevards separated by dreary slums. You see crowds of equestrian and other statues. You ask who they commemorate. ‘General this, Marshal that, General somebody else.’ You see imposing buildings—War museums, Colonial museums, public offices. But you also see this notice in the dismal courts tucked away out of sight: ‘Playing is forbidden by order of the police.’

“ Imagine that. There are 600,000 children in Berlin, with no place for them to play in besides their homes! The natural result has been such a growth of socialism that the Kaiser and the Imperial family are constrained to exercise their privileges as voters in their district in the vain attempt

to keep socialists out of Parliament! Haussmann and his town-planning triumphs were a prelude to Sedan. Stubben and his congeners in Prussia have without doubt paved the way for the still more complete overthrow of the Kaiser."—*Copartnership*.

City Planning in New York.*

Two things are noticeable with relation to the powers and composition of the planning commission just appointed for the City of New York. It is purely advisory and it is a large *unpaid* body of citizens giving but a fraction of their time to this public work. In writing on this subject, Frank B. Williams, a member of the commission, says :

"Personally I believe that city planning commissions should have advisory powers, and no others; and such appears to be the growing practice. City planning touches and concerns nearly every phase of city administration. To narrow the field of such a commission would prevent it from doing comprehensive planning, and defeat the chief object of its appointment; to give it power other than advisory would divide authority and responsibility between the commission and the city administration, which is contrary to sound principles of Municipal Government. That the advisory commission, to have power, must win support by educating the citizens is no misfortune to the cause of city planning or good government generally. Only progress by this method is permanent.

"The New York commission is given no power to compel reference to it of city planning matters, or to delay final action by other departments until it has had opportunity to investigate and report. Some measures at least of these powers I believe every city planning commission should have. The composition of the New York commission would seem to be a guarantee that practically, it will not lack these powers. The city is not likely to force to a premature decision matters in which these men suggest that further investigation is necessary.

"The New York commission is a large unpaid body composed of citizens who are not city planners, but are busy with matters closely related to some part of the city plan. The intention is to divide the commission into numerous sub-committees so as to make it possible for men with little time for work to cover the whole field.

"There are many methods of forming a city planning commission. It is my belief that the choice should lie between a large unpaid citizens' commission, and a small highly paid professional commission. At the stage in which city planning finds itself at present, there is much to be said for the form of commission New York has chosen."

General Recommendations for Town Planning.

The following recommendations in regard to the town-planning of Victoria are made by the Victoria Town Planning and Parks Association.

(1) A comprehensive Town Planning Act on more direct and simple lines and with greater compulsory powers than the British Housing and Town Planning Act of 1909 to deal with

(a) All undeveloped areas in or adjoining all towns or cities.

(b) The improvement of areas already wholly or partially built up.

(2) The creation of Town-planning and Housing Commissioners to consider, amend and approve all town-planning proposals or to take action in case of neglect by local authority.

(3) A town-planning authority (wherever possible the City Council for every town or city in the State), whose duty it shall be to prepare a plan and regulations for the future development, amenity and improvement of the district or town irrespective of present administrative boundaries.

(4) The essential provisions of such a Town Planning Act should include :

(a) Power to lay down street and building lines, and to make requirements as to street construction.

(b) To vary statutory widths of roads, etc.

(c) To prescribe the maximum height and character and to limit the number of buildings per acre. (This may vary in different parts of the town.)

(d) To prescribe special districts for factories and other purposes.

(e) To acquire or secure lands for open spaces, park belts, street or city improvements, clearance of insanitary areas, or other public purposes (including garden suburbs), at the Government valuation current prior to the initiation of the town-planning or city improvements scheme.

(f) To secure for the public a proper proportion of the betterment due to any public improvement under town-planning.

(g) To provide for the creation of parks for public use and for the protection of the native fauna and flora.

(5) It is desirable that

(a) all main or arterial roads should be subsidized or maintained by the state.

(b) cheap and rapid transit and rail or water facilities should be an integral part of town-planning schemes.

(c) tenement houses should be strongly discouraged, and the principle of one family one house firmly maintained.

(d) that scenery and natural features, such as streams and hill summits, and objects of historic or scientific interest, should be preserved, and, wherever practicable, belts of open country permanently reserved on the outskirts of cities and new suburbs.

(e) that the principles of the garden city movement should be applied or adapted to every scheme of town-planning, or to every new town created in the State.

Why are Civic Surveys necessary or desirable ?

Broadly speaking, there may be said to be two reasons why it is desirable for the inhabitants of any town to have access to an ordered record of their corporate interests :—

(a) Such a record stimulates the individual citizen to take a wider interest in his city as a whole ; and by directing his attention to those assets in the life of the community, the value of which he may not, owing to his concentration in his own occupation, have had an opportunity in the past of fully appreciating, places him in a better position to form a reasoned and balanced judgment on those occasions when, owing to development in any direction, a re-adjustment is proposed of the existing arrangements of his town.

(b) Further, such a record not only enlightens the judgment of the main body of citizens, but also enables their technical advisers who may be charged with the task of elaborating and carrying out improvements in Town Planning to provide for a just compromise between the various elements, intellectual and material, which may be affected by new arrangements.

It is claimed that, in the absence of such a record as is defined by the term "civic survey," there is no adequate means of preventing undue concentration of attention upon the enhancement in value of any one of a city's assets to the serious depreciation of others and to an ultimate loss to the community as a whole.

For example, hygienic interests may be unduly sacrificed to commercial or industrial interests ; and open spaces valuable or even essential to the public health, may be built upon without the general public or its advisers fully appreciating that they are in reality losing more than they gain ; or again, too complete an absorption in existing traffic problems may result in the destruction of buildings of more than municipal interest and the loss to the town itself of some of the most valuable of its amenities.

As there is a wide and general recognition that such cases as those referred to above have either occurred, or have only been avoided by the unsatisfactory method of discussion in the public press, it is here unnecessary to quote examples.

Though it is not claimed that the existence of a record, however attractively compiled or easily understood, will bring about anything approaching to a complete agreement among the inhabitants of a town in respect of any new adjustment which may be in contemplation, yet it is confidently held not only that the development of a wider civic sense will be helped forward if an opportunity be given to citizens to acquire the knowledge to be provided by civic surveys, but also that the number of admitted mistakes in town management will tend to decrease proportionately with the increase in knowledge and interest which carefully compiled civic surveys will certainly bring.

Government Orders and Notifications.

[Assam.]

MUNICIPAL LEGISLATION.—Municipal institutions in Assam include municipalities under Acts III (B.C.) of 1884 and V. (B.C.) of 1876, and stations and unions under the latter Act. The existence of two Acts dealing with municipal institutions is in itself inconvenient, and, moreover, both Acts are in many respects obsolete and incomplete. The Chief Commissioner therefore considers that the time has come for the municipal law of Assam to be consolidated and brought up to date in the light of modern municipal legislation. He will in the first instance indicate the main outlines only of the contemplated legislation, and will at a later stage consult the public on the details when a draft Bill has been prepared.

2. One of the most important points to be dealt with is the treatment of the smaller towns, where some form of municipal government is required, though not of such an advanced

character as is suitable in the case of the larger towns. In this connection a reference is invited to paragraphs 813 to 815 of the Report of the Decentralisation Commission and to the chapters of the Municipal Acts of other provinces cited below, which are reproduced *in extenso* as an annexure to this Resolution.* The Commission's recommendation is that the legislation in regard to small towns which is contained in Chapter XI of the Punjab Act XX of 1891 (Chapter XIII in the revised Act III of 1911), Chapter X of the Burma Act III of 1898, Chapter XII of the United Provinces Act I of 1900 and Chapter XI of the Central Provinces Act XVI of 1903, should be generally followed. The Acts referred to are municipal Acts, and the chapters quoted, which are all framed on similar lines, provide for the application by the Local Government, with such restrictions and modifications as it may think fit, of the provisions of any section of the Act to any specified area, which must contain a town or bazaar and be not a purely agricultural village. These provisions are much superior in every way to those relating to unions and stations in Act V of 1876 which are clumsy and out of date; and the Chief Commissioner proposes to adopt them, with provision for preliminary notification and the hearing of objections, before the extension of the chapter in regard to small towns, or of definite provisions of the Act, to any local area. In the Acts cited, the local body in the case of small towns is termed a "Committee" or "Town Committee"; the Chief Commissioner proposes to adopt the latter term which seems to him to be preferable to the term "Town *Panchayat*" suggested by the Decentralisation Commission. It will probably be advisable at first that the Chairman, Vice-Chairman and members of town committees should be appointed, but it is proposed that the Act should contain an elastic clause allowing of either nomination or election of members and of the Chairman and Vice-Chairman. A general clause permitting the delegation of powers to Commissioners of Divisions and Deputy Commissioners at the discretion of Government, in respect of such small towns, is also contemplated.

* Not reproduced here.

3. Section 10 of Bengal Municipal Act (III of 1884) lays down certain conditions which must be satisfied before a municipality can be created in any area. Three-fourths of the adult male population must be non-agricultural; the total population must be not less than 3,000; and the population must average not less than 1,000 to the square mile. The total population, its density and its pursuits, are of course matters which would be considered in deciding whether a given area required municipal government, but it is not necessary, in the Chief Commissioner's opinion, that hard-and-fast rules should be laid down regarding them. The technical difficulties raised by this section have recently proved an obstacle to the formation of a municipality at a subdivisional headquarters station of some importance, and similar restrictions are not now found in the Municipal Act of other provinces. It would seem *prima facie* desirable to have greater discretion and more elasticity than is allowed by section 10 of the Bengal Act, and the Chief Commissioner therefore proposes to follow the example of other Municipal Acts and to omit these conditions from the Bill. Copies of the relevant sections of the Municipal Acts of other provinces, namely, section 4 of the Punjab Act III of 1911, sections 4 and 4A of Madras Act IV of 1884, substituted for the original section 4 by Madras Act III of 1897, sections 3 and 4 of Burma Act III of 1898, sections 4 to 8 of the United Provinces Act of 1900, sections 4 to 8 of Bombay Act III of 1901, and sections 3 to 7 of the Central Provinces Act XVI of 1903, will be found cited *in extenso* as an annexure to this Resolution.*

4. The Chief Commissioner considers that ordinarily the Chairman of a municipality should be an elected non-official, and that there should be a substantial majority of elected Commissioners; but in view of the conditions obtaining in towns, such as Shillong, he considers it necessary to include provision for the appointment in special cases by Government

* Not reproduced here.

of the Chairman and of any proportion of the Commissioners. He prefers, however, provisions like those contained in sections 14 and 20 of the Punjab Municipal Act of 1911, or in sections 7 and 17 of Burma Act of 1898, permitting the Local Government to declare that in any town where the circumstances require it the Chairman or any proportion of the Commissioners shall be appointed by Government, to the inclusion of such towns in schedules attached to the Act, as in Bengal Act III of 1884. Subject to the above conditions, provision will be made in the Bill whereby the Chief Commissioner will have power to make rules for the election of members, and to fix by notification—

(a) the total number of members ;

(b) the number of appointed members and the number of elected members ;

(c) the distribution of elected members among the different sections of the community and in different localities ; and

(d) the qualifications of members and of electors, or of any electorate body.

5. Provision will be made for the election for appointment of a Chairman to act during the temporary absence of the permanent incumbent.

6. It is considered desirable to include a provision similar to that contained in section 17 of the Bengal Local Self-Government Act (III of 1885), that no Commissioner whose resignation has been accepted shall be eligible for re-election until the expiration of the term for which he would have held office but for his resignation.

7. The present law contains no provisions as regards penalising corrupt practices at elections. This should, it is proposed, be remedied with reference to more recent enactments, such as those contained in section 10 B of Madras District Municipalities Act, IV of 1884, and section 45 of Madras City Municipal Act, III of 1904, copies of which are attached as an annexure to this Resolution.*

* Not reproduced here.

8. In accordance with the recommendation made in paragraph 856 of the Report of the Decentralisation Commission, the Chief Commissioner proposes to legalise the delegation of administrative functions to Committees, which may include persons other than Municipal Commissioners.

8A. Under section 45 of Bengal Act III of 1884 the Chairman of a municipality can delegate certain of his powers to the Vice-Chairman, but there is no provision in the Act under which the Chairman can delegate any of his powers to other executive officers of the municipality. Such power of delegation is very necessary in cases, for instance, where a municipality has a Health Officer or Engineer, and it is proposed to include a provision to this effect in the new Act.

9. It is generally agreed that orders relating to indebtedness on the part of Government servants should apply also to the officers of local bodies. This has been provided for as regards Calcutta by sections 28 and 67 of Bengal Act III of 1899. It is accordingly proposed to provide that serious indebtedness shall be a disqualification for the offices of Chairman, Vice-Chairman, Secretary, Engineer, Health Officer, Sanitary Inspector, Tax-collector, Accountant or Overseer of a municipality.

10. It is proposed to insert a clause legalising the payment of gratuities or pensions to the families of municipal servants who may die from disease or injury contracted in the discharge of the duties of their office.

11. The position of pleaders and other legal practitioners who are Commissioners of municipalities has given rise to difficulty. Under the law as it now stands, there is nothing to prevent a pleader from appearing in cases against a municipality of which he is a Commissioner although he may, in that capacity, obtain information which he may use against the interest of the municipality. On the other hand, it has been held by competent authority that no pleader can render paid professional service to a municipality of which he is a Com-

missioner without rendering himself liable to the fine of Rs. 500 provided by section 57 of Bengal Act III of 1884. In this way the municipalities may be deprived of the services of the ablest members of the local Bar. It is accordingly proposed to add to section 20 of that Act a clause providing that a legal practitioner who is a Municipal Commissioner may not hold a brief in any case instituted against the Commissioners without their consent. It is also proposed to add a proviso to section 57 of the same Act to the effect that nothing in that section shall apply to a legal practitioner who is a Commissioner and who receives a fee from the Commissioners for services rendered to them in his professional capacity. It is proposed that similar immunity should be given to medical men who receive fees from the Commissioners for services rendered to the municipality or for attending on members of their staff.

12. The assessment clauses of Bengal Act III of 1884 are capable of improvement in several respects. It is proposed to make an addition to section 87, similar to the latter part of section 98, empowering the Commissioners, with the sanction of the Chief Commissioner, to exempt any person from assessment to the tax on persons in respect of the occupation of any holding used for purposes of public charity. It is also proposed to give the Commissioners power to make exemptions from the assessment of latrine fees in favour of persons occupying dwelling houses of less than Rs. 6 annual value, and to make the provisions of section 98 regarding the exemption from assessment of places of worship, etc., applicable to Part IX. It is also proposed to empower the Commissioners to entertain appeals against the assessment of latrine fees and to modify the assessment.

In order to facilitate assessment, it is proposed to amplify section 99 of the same Act so as to provide that the return, which can thereby be required from the owner or occupier of a holding, shall contain a description of the holding in such detail as the Commissioners may direct. This information is required

for the preparation of the valuation and rating list which, under section 103, has to contain a description of the holdings. It will also facilitate revision of the valuation under section 108 in the event of any addition or alteration being made to a holding. In order to avoid possible lack of continuity and responsibility, it is proposed to provide in section 114 that the Chairman and Vice-Chairman should always be *ex-officio* members of the appellate committee, that the number of members should be limited to five, inclusive of the Chairman and Vice-Chairman, provided that no Commissioner shall take part in hearing or determining any application from the ward which he represents, or (in the case of a nominated Commissioner) in which he resides, though such Commissioner shall be entitled to give evidence with regard to the matter under enquiry, and that no application for revision shall be heard or determined, unless at least three members of the appellate committee, including the Chairman and Vice-Chairman or both, are present.

13. Section 130 of Bengal Act III of 1884, permitting irrecoverable taxes to be struck off the books, is applicable to house-tax only. It is proposed to transfer it to Part XII of the Act, so that it may be made applicable to taxes and rates of all kinds, and to extend its operation so as to cover warrant-fees.

14. The municipal enactments of Madras, the Punjab and the Central Provinces contain provisions for the prohibition of wet cultivation within municipal limits. It is considered that similar provisions would be useful in Assam, and it is therefore proposed to empower the Chief Commissioner on the application of the Municipal Commissioners to prohibit wet cultivation within the limits of a municipality. To any provision of this nature there would be a proviso that, if the act prohibited had been practised in the ordinary course of husbandry during the five years next preceding the date of the prohibition, compensation should be paid from the Municipal Fund to all persons interested therein for any damage caused to them by such prohibition.

15. It seems desirable to bring the municipal law into line with the recently drafted Assam Local Self-Government Bill in the matter of the power to construct and guarantee interest upon railways and tramways. It is therefore proposed to empower municipalities to construct and maintain railways or tramways either singly or in combination with any other local authority, or to guarantee interest on capital expended on railways or tramways. The power would be subject to the sanction of the Chief Commissioner, and as a further safeguard it would be provided that application for such sanction could be made only if it is authorised by a two-thirds majority at a special meeting of the Commissioners. The Chief Commissioner, however, does not propose to authorise municipalities to make any specific and special increase of taxation for these purposes.

16. Additions to section 69 of Bengal Act III of 1884 are contemplated with the object of legalising expenditure from Municipal Funds on—

(a) paying the expenses of any of the poorer inhabitants of the municipality for their journeys to and from any hospital established in any part of British India for the treatment of special diseases,

(b) the construction and maintenance of boarding houses to be used in connection with schools.

(c) the payment, at the discretion of the Commissioners, of allowances to medical practitioners for professional services rendered to the municipality or to the establishment employed by them,

(d) the improvement of the amenities of the municipal area, and

(e) such objects as the Commissioners, with the approval of the Chief Commissioner, may declare to be legitimate charges on the Municipal Fund.

16-A. Part VI of Bengal Act III of 1884 deals with rudimentary matters over which power of control is essential

for the proper sanitation of a town. The provisions contained in this part are of a permissive character. In view of the greater interest now displayed in sanitation, it is proposed to take power to make them mandatory in all municipalities.

17. The provisions relating to the sale of food and drink, which are contained in sections 249 to 253 of Bengal Act III of 1884, should, it is proposed, be brought up to date with reference to the legislation which has been or is being enacted in other parts of India. Power will be given to the Municipal Commissioners to regulate by bye-laws the preparation and vend of articles of food or drink, the import and sale of milk and butter, and the keeping of dairies, cattle-sheds and slaughter-houses. Power will also be taken to prevent bad food and milk being imported from outside municipal limits into municipalities. The provisions of sections 251 to 251D dealing with the adulteration of articles of food are defective inasmuch as they do not adequately provide for analysis and sampling. Adequate provision will be made under both these heads and the adulteration of common articles of food, such as milk and ghee, will be specially dealt with.

18. For the enforcement of the provisions relating to the sale of articles of food and drink and the other sanitary provisions of the Bill, the Chief Commissioner proposes to empower the Local Administration to lay down the minimum of sanitary staff (with qualifications and pay) that should be maintained by each municipality, and to enforce the authority of such sanitary officers as may be appointed. Similarly, it is proposed to take power to lay down the minimum of sanitary plant that should be maintained by each municipality. In the event of the commissioners of the municipality failing to appoint such staff or purchase such plant as may be laid down, it is proposed that the District Magistrate or the Sanitary Board shall be enabled to do so at the expense of the municipality.

It is also proposed to empower the Sanitary Commissioner or his deputies and the Sanitary Engineer to make inspections within municipal limits as often as they consider necessary.

19. The Chief Commissioner thinks that it may be useful to empower a municipality to prescribe standard weights and measures to be used within the municipal area and to enforce the same.

19A. It is proposed to take power to deal with houses unfit for human habitation on the lines of English legislation. When a house has been declared unfit for such purpose and the owner has failed to render it habitable within a certain specified period, it is proposed that the municipality shall have the power to demolish the house at the owner's expense.

20. It is proposed to adopt from more recent Acts provisions giving to the Commissioners adequate powers of control in the laying out of private streets.

21. In certain provinces boats used or moored within municipal limits can be taxed by the municipality. Opinions are invited as to the advisability of adopting similar provisions in Assam. Advice is also solicited whether municipalities, situated on the banks of navigable rivers, should be given control over the traffic of the rivers and the mooring of boats on the banks.

22. Since the Bengal Act, III of 1884, was passed, there have been several new Municipal Acts enacted in various provinces, and the opportunity will be taken to introduce in the Bill many of the modern improvements which those Acts contain, but which it is not necessary to specify at this stage. For the present the Chief Commissioner has selected for the information of the public only more or less important and interesting points. Before proceeding to prepare a draft Bill, the Chief Commissioner is anxious to ascertain the views of the people of the province on the proposals which have been put forward in this Resolution. He accordingly desires that Commissioners of Divisions should consult Deputy Commissioners, Municipalities, and Associations, public bodies and individual gentlemen likely to be interested in the matter, and should within three months of the date of this Resolution submit with their reports the opinions expressed by those

officers and bodies. In the event of any Association or other public body preferring to submit its views direct to the Chief Commissioner, he would be glad if copies be sent to the Commissioner of the Division concerned, in order that the latter may have an opportunity of considering the points raised when submitting his report to the Local Administration.

[Bombay.]

ANTI-PLAGUE INOCULATION.—The following Press Note has been published by the Bombay Government for general information:—

Although the value of inoculation as a plague preventive measure has been fully established, it seems desirable that every year additional evidence should be brought to the notice of the public. The figures given below have been specially selected from among the reports on inoculation recently received, and are reproduced from the Report of the Bombay Bacteriological Laboratory for the year 1913. Similar figures for the year 1912 were included in the pamphlet entitled "The Past, Present and Future of the Bombay Bacteriological Laboratory" published by Government in June last. In compiling these statistics, certain errors which are likely to occur have been carefully guarded against so far as is possible. The figures indicate in a striking manner the efficacy of inoculation as a protective measure against plague.

Carefully prepared statistics were received from the Sanitary Commissioner with the Government of Bombay for some of the villages in the Bijapur District. The statistics refer to houses in which inoculated persons were living with the uninoculated, so that all ran the same chances of acquiring infection. Only those houses have been considered in which plague cases occurred after inoculation operations had been completed.

In the village of Amingad in the Bijapur District, which has a population of 4,339 persons, rats began to die in October,

1912. The first case of plague was reported on the 1st November, 1912. The village was visited early in November by an inoculator but only a few persons came forward for inoculation. Some of those who were inoculated contracted plague, but in contrast to the uninoculated who when attacked by the disease generally died, those who had been inoculated recovered. When the village was again visited by the inoculator early in December, the people on this occasion crowded to him for inoculation, and within a few days, more than fifteen hundred persons were inoculated. All these persons, however, were not residents of the village during the epidemic; for, some of them had evacuated their homes and were occupying temporary quarters outside the village. At the close of the epidemic, a careful house-to-house inquiry was made, and it was ascertained that of the 1,767 persons, who continued to live in the village throughout the epidemic, 953 were inoculated. Among the inoculated, ten persons were attacked by the disease and four of them died, while among the 814 persons who had not been inoculated there were 93 attacks and 81 deaths. If households in which inoculated persons were living beside uninoculated persons throughout the epidemic and in which plague cases occurred are alone considered, it was found that in 48 such households 177 inoculated persons were living beside 154 not inoculated, and that the former had eight attacks and two deaths while the latter had 57 attacks and 48 deaths. If those who were inoculated in these infected households had suffered from plague to the same extent as those who were not, they should have had 65 attacks and 55 deaths in place of 8 and 2 respectively. Thus, in this little village of four thousand inhabitants it appears that at least fifty-three lives were saved by inoculation.

In a number of other villages the deaths from plague were reduced by inoculation; for example, in the village of Rakhasgi, a house-to-house inquiry conducted at the close of the epidemic showed that among 308 persons who had been inoculated and who remained in the village throughout the epidemic only two

died, while among 247 persons who were not inoculated there were as many as 28 deaths.

Similarly, in the village of Kamatgi a house-to-house inquiry conducted at the close of the epidemic showed that 292 persons who had been inoculated lived in the villages throughout the epidemic with 392 persons who were not inoculated; only three inoculated persons died of plague, while 97 of the uninoculated succumbed to the disease.

The outbreak of plague in the small village of Tondihal is of interest; here the whole population, 153 persons, were inoculated before plague began, because a severe epidemic was raging in adjoining villages less than a mile distant. Although it is stated that rats continued to die of plague in the houses of the villagers for nearly two months, only four persons were attacked by plague and all recovered.

A similar experience was recorded in the village of Sulebhadi, where 1,832 persons were inoculated in a population of 3,392. Inoculation was practised chiefly in the infected parts of the village, and the mildness of the epidemic was attributed by the villagers to the effect of inoculation. Among other instances where the beneficial effect of inoculation was noticed the following is especially striking and noteworthy. In one household containing seven persons, three were inoculated and four were not inoculated. Three of the latter contracted plague and died, while only one of the three who had been inoculated suffered from plague and he recovered.

In the town of Coimbatore, largely owing to the energy and influence of Khan Sahib Gulam Hussain Sahib Bahadur the Honorary Plague Officer, nearly forty-six thousand persons were inoculated out of a population of a little over fifty-five thousand. Owing to the difficulty of controlling and observing so large a population during the progress of an epidemic of plague, it is not possible to obtain figures which are beyond statistical criticism, but making the most liberal allowance for

certain factors which might influence the figures in favour of inoculation as a preventive measure against plague, it was found that among the persons who were inoculated the ratio per mile of the average strength for the period was 5·64 attacks and 2·1 deaths, while similar figures for those who were not inoculated were 31·28 attacks and 21·7 deaths per mile. In other words, there were ten times as many deaths among those who were not inoculated as among those who were inoculated.

[Madras.]

GRANTS TO DISTRICT BOARDS AND MUNICIPALITIES.—Grants aggregating Rs. 6,16,477 were distributed among certain district boards and municipal councils out of the provision of ten lakhs made in the Civil Budget Estimate for 1914-15, on account of grants to local bodies for the construction of medical buildings. Out of the balance, a sum of three lakhs has been resumed, while the Municipal Council of Cuddapah has been directed in G.O.No. 336 M, dated 3rd March 1915, to refund the grant of Rs.4,800 made to it in G.O. No. 2222 L., dated 10th December 1914.

2. A total sum of Rs. 88,323 is thus available and this will be distributed as follows.

3. The Municipal Council of Coimbatore will be informed that the Government have been able to allot to it only Rs. 16,267 towards the construction of medical buildings in the Venkatagoundan block against the grant of Rs. 19,545 noted for consideration in G.O. No. 102 M., dated 22nd January 1915. The Council should either provide the balance of Rs. 3,278 from its own funds or omit one or more items which are not urgent, *e.g.*, quarters for two servants (Rs. 2,110) and compound wall with gates (Rs. 1,960).

I

Grants to District Boards for the construction of medical buildings for 1914-15.

Serial number and name of District Board.	Work for which the grant is intended.	Amount of grant. Rs.
1. Chittoor ..	Additional grant towards the construction of quarters for two compounders in the Local Fund hospital at Chittoor ..	420
2. Ramnad ..	Construction of a new hospital at Sivaganga.	10,600
Total, District Boards ..		<u>11,020</u>

II

Grants to Municipal Councils for the construction of medical buildings for 1914-15.

Serial number and name of municipality.	Work for which the grant is intended.	Amount of grant. Rs.
1. Bellary	Construction of a general hospital (amount required in the current year)	5,000
2. Coimbatore ..	Construction of certain medical buildings in the Venkatagoundan block	16,267
3. Guddiyattam ..	Improvements to the dispensary— (1) Construction of a main ward of twelve beds (2) Construction of a general store room (3) Construction of an isolation ward (4) Construction of a mortuary (half cost)	8,540 2,400 4,000 700
		<u>15,640</u>
4. Madura	Provision of a building for a branch dispensary (additional grant required) ..	5,056
5. Rajahmundry ..	Improvements to the municipal hospital (additional grant required)	35,340
Total, Municipalities ..		<u>77,303</u>
Grand total, District Boards and Municipal Councils		88,323

[G. O. No. 466L., dated 22-3-15.]

[Punjab.]

DISTRICT BOARDS.—The Lieutenant Governor, in exercise of the powers conferred by section 5 (2) of the Punjab District Boards Act, 1883, has been pleased to declare that the proportion which the local rate shall bear to the annual value of land in the Jhelum District is increased from Rs. 4-2-8 to Rs. 5-3-4 per cent. This notification has effect from 1st April 1915, and the local rate falling due after that date shall be levied at the increased rate.

Legislative Intelligence.

[Parliament.]

SEWAGE DISPOSAL: ROYAL COMMISSION REPORT.—Sir James Yoxall asked the President of the Local Government Board if he had information as to when the next report of the Royal Commission on Sewage Disposal is likely to be issued?

Mr. Herbert Samuel replied: The final report has now been signed and will be issued shortly.

[Imperial Legislative Council.]

VILLAGE SELF-GOVERNMENT.—The Hon'ble Pandit Bishan Narayan Dar asked Government for information as to when their orders might be expected on the recommendations made by the Royal Decentralisation Commission with a view to increase the powers and resources of local bodies and to develop a system of Village Self-Government.

The Hon'ble Mr. Porter replied that the Government of India would shortly issue a resolution on the subject.

[Bombay.]

MUNICIPALITIES AND HEALTH OFFICERS.—The Hon'ble Rao Saheb Venkatesh Shrinivas Naik asked if any proposals had been made to Government by the Sanitary Commissioner, or by any Municipalities for conveniently grouping smaller Municipalities for the purpose of appointing Health Officers and Sanitary Inspectors?

Government replied that one such proposal had been received from the Sanitary Commissioner and it was still under their consideration.

[Madras.]

EXECUTION OF MINOR SANITARY WORKS BY CO-OPERATIVE SOCIETIES.—The Hon'ble Rao Bahadur M. Ramachandra Rao asked Government for information as to the extent to which the execution of Minor Sanitary works had been entrusted to co-operative societies and the nature of the work done or to be done by them?

Government laid a statement on the table from which it appeared that twenty Societies were entrusted with the execution of Minor Sanitary works consisting mostly in the sinking and repairing of wells. The amount entrusted to them was Rs. 17,618. Reports on the way in which the works were done had not then reached Government.

[Bihar & Orissa]

SANATORIUM FOR TUBERCULOSIS PATIENTS.—The Hon'ble Mr. Filgate asked if the Government had considered the question of a sanatorium for the Province of Bihar and Orissa?

The Hon'ble Mr. Hammond replied :—"The provision of a sanatorium in the hills for persons suffering from tuberculosis in Bihar and Orissa has been considered. It was proposed that accommodation should be provided for people from this province in connection with the Bhowali Sanatorium in the Naini Tal District of the United Provinces. The Trust Committee, which manages that sanatorium, however, were unable to accept this proposal, and it was dropped. No other suitable site for such a sanatorium has yet been found. The question is now being further considered in the light of a suggestion which has been made by Dr. Lankester that instead of providing a sanatorium in the hills which would benefit only a very limited number of persons, local sanatoria of a simple character should be provided, where comparatively poor patients could be treated under favourable conditions and where they and their relatives could receive a practical training in the curative and preventive treatment of the disease. Meanwhile, the erection of tubercular wards in connection with the principal hospitals of the province has been taken in hand. Sanction has been given to the erection of such a ward in the Bhagalpur Hospital in the current year and another will be erected at Ranchi during 1915-16."

COMPOSITION OF THE SANITARY BOARD.—The Hon'ble Babu Dwark Nath asked whether Government were aware that there were non-official members on the Sanitary Board

of the United Provinces and whether Government proposed to add non-official members to the Sanitary Board of Bihar and Orissa?

The Hon'ble Mr. Hammond replied :—

It is understood that there are non-official members on the Sanitary Board in the United Provinces. The Sanitary Board is a small body whose main duty is to advise Government on schemes prepared by the Sanitary Engineer at the instance of Local Bodies. It is required to meet at frequent intervals, and Government do not consider that it would be desirable at present to add to its size by the appointment of non-official members.

TRAVELLING DISPENSARIES.—The Hon'ble Mr. Dwark Nath asked how many travelling dispensaries there were in the province, how many of them were maintained by Government and the District Boards and what it ordinarily cost to equip and maintain such dispensaries? Government replied that there were fourteen dispensaries in the province besides a floating dispensary in Cuttack; ten were maintained by Government and four by District Boards; the cost of one was divided. The attention of the District Boards had recently been drawn to the desirability of increased expenditure in that direction and it was expected that a number of such dispensaries would soon be established. The initial cost of equipment of a travelling dispensary was estimated to be about Rs. 750 and the annual cost of maintenance was about Rs. 2,600.

MEDICAL RELIEF IN DISTANT VILLAGES.—The Hon'ble Maulvi Saiyed Muhammad Tahir asked Government to state what steps had been taken for the supply of medical relief to sufferers lying in villages at a great distance from charitable dispensaries in the Province?

The Hon'ble Mr. Hammond replied :—“The responsibility for providing medical relief in rural areas rests with the District Boards. The only way in which such relief can ordinarily be afforded is through the agency of dispensaries,

and it is hoped that the number of these institutions will be largely increased now that the proceeds of the Public Works Cess have been placed at the disposal of District Boards. The attention of the Boards has been drawn to the desirability of establishing travelling dispensaries where the local conditions are favourable. Medical officers in charge of dispensaries are sometimes deputed to visit out-lying markets on market days in order to afford relief in minor cases of sickness. When epidemic disease breaks out, special medical officers are often sent to the locality with a supply of medicines."

[Punjab.]

VILLAGE SANITATION.—The Hon'ble Rai Bahadur Ram Saran Das asked what stage, legislation with regard to village sanitation had reached?

Government answered that Commissioners had been consulted on the question of introducing legislation on the lines of the United Provinces Village Sanitation Act, and that their replies were awaited.

INFANTILE MORTALITY.—The Hon'ble Rai Bahadur Ram Saran Das also asked what the average yearly percentage of infantile mortality was in the Punjab during the last five years and whether, in view of the serious danger to infant life, Government would be pleased to suggest to district boards throughout the province the importance and urgency of employing competent midwives?

Government replied as follows :—

"Midwives are at present trained at Ludhiana, Ferozepore, Ambala and Amritsar, and there are also facilities for training at Lahore, but no candidates. It is understood that the provision of further facilities is under consideration, but Government is not yet in possession of details. The matter is primarily one for local bodies and a suitable opportunity will be taken of suggesting to district boards and municipal committees the importance of employing properly trained midwives and of affording facilities for their training. Government fully recognises the importance of the question and would

welcome a movement for the better training of midwives not only among Local Bodies but among all who are interested in reducing the present deplorably high rate of infant mortality."

[Bengal.]

SMALL-POX IN CALCUTTA.—The Hon'ble Maharaja Ranajit Sinha of Nashipur asked whether it was a fact that there had been an epidemic of small-pox recently in Calcutta and what steps had been taken to check the spread of the disease?

Government replied that small-pox had broken out in an epidemic form; to supplement the existing accommodation for small-pox patients in the Campbell Hospital, Government had sanctioned the opening of a temporary small-pox hospital. The Corporation of Calcutta had acquired a site at Gobra and were making necessary arrangements. Temporary vaccinators had been appointed for the vaccination of persons working in the mills in or near Calcutta and of the shipping community of the Calcutta port.

The Calcutta Corporation had taken the following, among other measures:—

(i) Shortly before the outbreak a warning notice urging the public to get vaccinated was published, and when small-pox was declared epidemic, a notification was published by beat of drum, by poster and in the press that all vaccination would be free of charge. As a result of this step the number of persons vaccinated has increased enormously.

(ii) The Health Department has been strengthened by the employment of extra vaccinators, both male and female and also of Medical, Disinfecting and *Bustee*-cleansing Inspectors.

(iii) Sixteen Medical men of the town having volunteered to vaccinate the poor free of charge, arrangements have been made to supply them with fresh lymph.

(iv) All school-boys, students, and employees known to have been in contact with a case of small-pox are quarantined.

(v) A small hospital has been opened in Tangra for Indian patients who can afford to pay.

(vi) Ambulances have been provided at each of the principal hospitals of the town, and arrangements have been made for disinfecting the *gharries* in which persons suffering from infectious diseases are carried to the hospitals.

(vii) As many cases of small-pox are treated at home, medicated oil has been distributed free for use as a disinfectant.

INFANTILE MORTALITY.—The Hon'ble Raja Mahendra Ranjan Ray Chaudhuri asked what measures had been taken to reduce the high rate of infantile mortality in Bengal generally and in certain districts specially to which he drew attention in a resolution moved by him last year?

The following reply by the Hon'ble Mr. Samman was laid on the table :—

“ In his speech on the Resolution moved in March, 1914, the Hon'ble Nawab Syed Shams-ul-Huda assured the Hon'ble Member that Government were determined to make a systematic effort to combat ignorance and to diffuse knowledge of sanitation and necessary preventive measures among the public.

The whole question of hygiene and sanitation, including the instruction of girls and women in domestic hygiene and in matters relating to maternity and the management of children has since been carefully examined by a Committee appointed by Government. That Committee has recently finished its discussions but its report has not yet been received by Government. It is understood that several practical suggestions have been made by the Committee: these will be carefully considered by Government on receipt of the report. Till then it is not possible for Government to formulate any general line of action, but in the meanwhile the Sanitary Officers of Government are doing all that lies in their power to combat ignorance in these subjects.”

EARMARKING PORTION OF GRANT FOR SANITARY PURPOSES.—The Hon'ble Maharaja Ranajit Sinha of Nashipur asked whether Government were earmarking any proportion of the grant of the Public Works cess to the District Boards for sanitary purposes during the current year?

Government answered in the negative.

Recent Publications.

THE SANITARY RECORD and MUNICIPAL ENGINEERING YEAR BOOK. Price 5s. net. The Sanitary Publishing Co., Ltd.

BUILDING CONSTRUCTION DRAWING. Part II. By Richard B. Eaton. Price 1s. 6d. net. E. & F. N. Spon, Ltd.

MECHANISM OF STEAM ENGINES. By W. H. James and M. W. Dob. Price 8s. 6d. net. Chapman and Hall.

LOCAL ACT PRECEDENTS: Clauses and Precedents in Electricity, Gas, and Water Legislation, being a comparison of the provisions contained in the model bills, in Special and Municipal Acts, and in Provisional Orders 1910-1914 relating to the public services. Compiled and noted by Jacques Abady, Barrister-at-law. Price 15s. net. Walter King.

A very useful publication to all Municipal officials.

Fire Insurance and the Municipalities. By A. Fingland Jack. Price 3s. 6d. net. P. S. King & Son.

Notes of Cases.

(Important Cases will be fully reported hereafter.)

HIGH COURT, MADRAS.

SADASIVA AIYAR AND NAPIER, J.J.

APRIL 15, 1915.

SUNSHADE OVER A PUBLIC DRAIN.

Drain and the sunshade within private limits—Power of Municipality to remove the same—Question whether sunshade interferes or not with the work of cleaning, etc., of drain immaterial.

In a suit brought by the plaintiff for an injunction restraining the defendant Corporation from interfering with a sunshade in front of his house, *held* that under Sec. 248 of the Madras City Municipal Act, III of 1904, the President has ample powers to call upon an owner of a building in a public street to remove a sunshade in front of his house which overhangs a public drain. *Held* also that a public drain is part of a public street and any projection over the drain space is a projection in a public street. *Held* also that the fact that the projection does not interfere with the proper cleaning and maintaining the drain as a drain is immaterial so long as it is a projection in a public street.

MUNICIPALITY'S DUTY CONCERNING STREETS. Unless the duty is expressly imposed by statute law or charter, a municipality is not bound to light its streets. But if a city obstructs a thoroughfare or permits it to remain obstructed, or out of repair, or in a dangerous condition, the fact of the absence of lights or safeguards of any kind at the place, resulting in injury to a pedestrian or other traveller on the street, or that a street lamp has been permitted to remain unlighted for several nights, may be considered with other pertinent facts in determining whether the city has been guilty of actionable negligence in failing to keep the streets in a reasonably safe condition for travel. *Georgia Supreme Court, Williams vs. City of Washington*. 82 *Southeastern Reporter*, 656.

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MAY

[1915

The Baroda Health Exhibition (1915).

[BY V. P. MADHAVA RAO, C.I.E., DEWAN OF BARODA.]

THE health of a country depends largely on the co-operation of its people in carrying out measures calculated to improve their own hygienic condition. Such co-operation is easier to secure in India than elsewhere, for Indians are not strangers to the knowledge and practice of hygiene. The Science of Health is one of those known to have had its origin in this country. Even the most ancient and sacred books of the land, the Vedas, Smritis, Itihasas and Puranas contain lessons in practical hygiene, both physical and mental, individual and communal. In no other country have the rules of health gained the support of Religion to such an extent as in India or been inculcated as Religion itself from time immemorial. They have worked themselves into the daily routine of the life of the people and are part of their customs and manners. It may be that some of these rules are not now correctly understood or followed, and that the changes necessitated by the altered conditions of life at the present day, are not being as readily adopted as could be wished. But, the fact that even the illiterate and poor in the country, do observe the old rules yet, in some form or other, in spite of the inconveniences involved, is a source of encouragement to those who are endeavouring to improve public health in the country.

Many of the old rules of health are of great practical value even now. They have therefore to be explained to the people in a way that will make them understood even by the illiterate. The alterations and additions that have become necessary at the present time have also to be explained similarly. The religious and hygienic instincts in the country are still very strong and the people will not be found slow to adopt what they understand to be for their own good. In attempting to promote health and prevent disease in this country, therefore, it is essential that greater efforts should be made than hitherto, to educate or rather re-educate the people in the methods they have to adopt to improve their hygienic condition. To ensure success, it is also necessary that such efforts should be as sustained and widespread as in the days of old, and that they should be made on lines that would appeal to the people readily even under the altered conditions of modern times, and inspire their active co-operation. The facilities for such work are greater in Indian States than elsewhere, for the protection and promotion of Health and Dharma have been the ideals of Indian Rulers from ancient times, and the deep and abiding loyalty of the people to their sovereigns may be accounted for by the trust with which they look to their rulers to do those duties which are traditionally associated with their high office.

It may interest the public to know that His Highness the Maharajah Gaekwar has from time to time endeavoured, amidst his other activities, to promote the health and physical well-being of his people. Recently, the Government of Baroda decided that with a view to advance further the cause of Public Health, Exhibitions should be held annually in different parts of His Highness' Territories, and suitable Health Museums gradually formed in different centres, so that even the illiterate masses might get correct ideas on matters affecting their health. These Museums will be organised under the supervision of Dr. Palpu, the newly appointed Sanitary Adviser to Government, who has made hygiene his special

study and has actually administered the Health Department in Mysore. They are to be connected with the Public Health Institute and School which are proposed to be started at Baroda, and placed in charge of the new Department of Public Health which is being constituted in the State. The different branches of the Public Service in the State as well as the Municipal and other agencies, immediately concerned with the administration of measures connected with Public Health, will be asked to render all possible help in the organisation of these Exhibitions and Museums. The idea is that at these Health Exhibitions the different measures being adopted by the local bodies or proposed to be adopted, in connection with the improvement of health, should be demonstrated, their advantages explained and the results compared with those achieved in other places. There will thus be created a healthy spirit of emulation in adopting the best sanitary measures for the well-being of the people. Individuals and firms, in the State and outside, who are engaged in different lines of work connected with health, and are endeavouring to advertise improved methods or to introduce wholesome materials or articles, will be advised to take advantage of the special facilities for advertisement and sale afforded to them in these Institutions, free of charge, to exhibit samples of their goods, and to make their advantages appreciated by the different departments and organizations concerned, as also by the people in general.

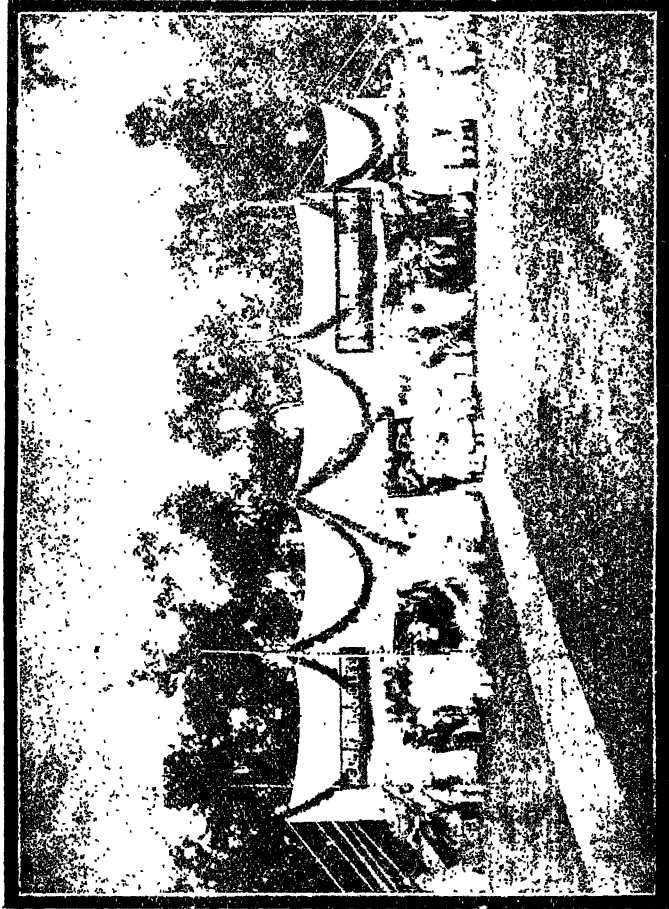
The first Health Exhibition of the Series was arranged to be held in the Public Park in Baroda which, on account of its central position and extensive grounds, is the most suitable for the purpose. Owing to the shortness of notice given, i.e., only about a month and a half, it was at first feared that the number of exhibits would be small. But the response was fairly good and more full and ready than was anticipated, under several of the heads. The large and varied collection of exhibits composed of pictures, charts, models and samples, filled up the two pavilions in the Park and the

several tents, shamianas and stalls that were put up temporarily for the purpose. The exhibits were arranged in several Sections and Sub-sections, such as Climate and Meteorology, Physiology and Pathology, Vital-Statistics, Air and Ventilation, Water and Water supplies, Domestic and Personal Hygiene, Clothing and Wearing Apparel, Food and their preparation, Dietaries, Milk and Dairy products, Physical Exercises, Games and Sports, First aid and Ambulance, Accidents and Emergencies, Prevention of Vices and Social Evils, Prevention of Malaria, Plague and other Diseases, Care of Invalids, Lying-in-women and Infants, Education and Health, Sanitary Engineering, Sanitary Conveniences, Drainage, Town-planning, Extensions, Model Villages, Sanitary Law and Practice, Public Health Library and Reading Room.

The Exhibition was opened by His Highness the Maharajah Sahib on the 7th of March, 1915, which was His Highness's Birthday, and it was a fitting addition to the usual Durbar and other functions of the day. The opening ceremony was largely attended. Among those present were His Highness the Nawab of Palanpur, the Princes, Sardars, Nobles and Officers from the State and outside. The Maharajah Sahib with his characteristic enthusiasm in all matters pertaining to the well-being of his subjects, made an instructive speech on the occasion in which he referred to the advantages of such Exhibitions and advised the people to turn into practice the various lessons enunciated and explained in the different sections of the Exhibition. Thousands of people from the City and the adjoining villages, visited the Exhibition that day, and the numbers increased daily. In view of the sustained interest shown by the public, the Exhibition was kept open till the 17th of the month.

It is impossible to give even a short description of the numerous exhibits, within the space of an article, but it was clear that considerable effort must have been made in the short time available to make the different sections as comprehensive

and instructive as possible, in accordance with the prospectus issued. The diverse means to be adopted in promoting health and preventing disease in the country were demonstrated in a



way that could be easily understood by the people, and the measures and appliances necessary were explained by means of notes and by a staff of demonstrators. Most of the sections were so fitted up as to be instructive to all classes alike, and the display of ancient Sanskrit texts and mottoes, with their translations, in the different sections, in support of the several branches of health work was both interesting and

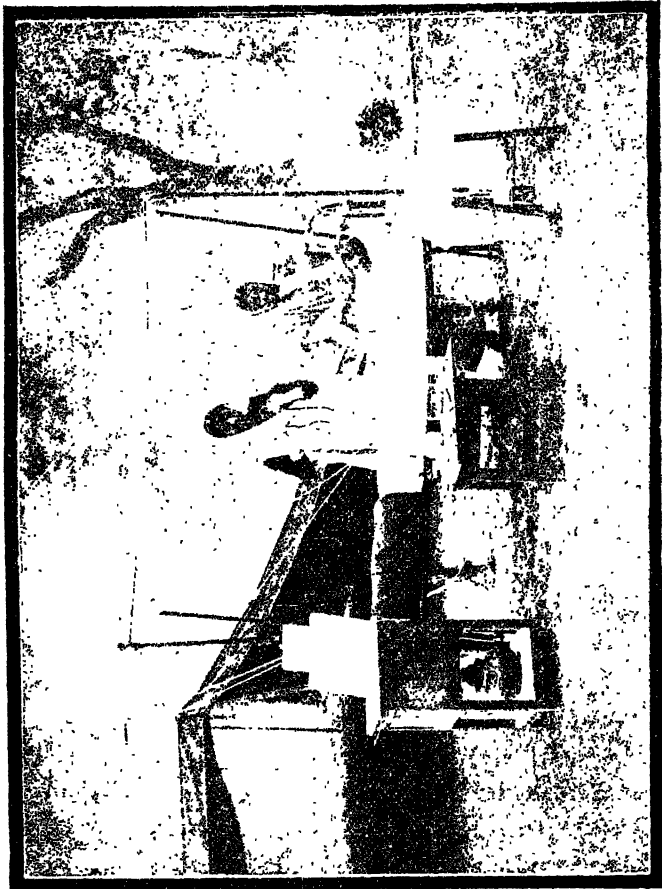
effective. The daily demonstrations in physical exercises, first aid and ambulance, sick nursing, care of infants, &c., were largely attended and the lectures on various subjects connected with health and prevention of disease and the Cinema Shows were equally popular. To add to the interest and practical value of the Exhibition, Professor Geddes, the famous Town Planning expert, who had been engaged to deliver a few lectures in Baroda, happened to come to the City when the Exhibition was still going on. His lectures and demonstrations were largely attended.

Apart from the lectures and demonstrations, there was also arranged a series of interesting competitions in connection with the Exhibition. These were mostly open to people from the whole State and were held in two separate sections. The items in the Ladies' section were :—

I. CLEANLINESS OF HOUSES AND PREMISES.—Owing to the shortness of time, this competition was confined to the Baroda City. The mistresses of homes and dwellings irrespective of class or creed, and representing all the wards of the City, who kept their houses and premises cleanest and tidiest during the Exhibition were given suitable prizes. A Committee of Ladies arranged the details of this competition, under the kind patronage of Her Highness the Maharani Sahiba and the 'Griha Lakshmis' who came up and received their well-earned prizes from the Maharajah Saheb were heartily cheered by the people.

II. CARE OF INFANTS.—This was another interesting item which had also to be confined to the City on this occasion owing to short notice. Mothers representative of different classes and different wards were selected for showing the greatest care of their children by the above-mentioned Ladies' Committee, and the award of suitable prizes to them by His Highness the Maharajah Saheb was a unique event. The mothers had turned out with their babies to receive this special honour, and they were most heartily applauded.

III. SICK-NURSING AND AMBULANCE FOR GIRLS AND LADIES.—This item was open to the whole State and the number that competed was fairly good for a start. The local Lady Doctor and the Matron of the Dufferin Hospital supervised the competition.



IV. COOKERY AND CONFECTIONERY FOR GIRLS BETWEEN 12 AND 15.—This was also an item open to the whole State and the competition was well attended and interesting.

V. RICE-POUNDING, ETC., BY WOMEN OF THE WORKING CLASS.—This was also open to the whole State but owing to

the shortness of time and other circumstances, only women from the City entered in this competition. The competition roused considerable enthusiasm among the working class women.

VI. WALKING, BADMINTON AND OTHER PHYSICAL EXERCISES AND GAMES BY EDUCATED GIRLS AND LADIES.—These were also open to the whole State and the items were contested fairly keenly, under the supervision of the Ladies' Committee. The general interest evinced was considerable.

The competitions in the Men's section consisted of :—

I. PHYSICAL EXERCISES OF KINDS, LOCAL AND FOREIGN, BY BOYS AND MEN.—The public schools and several of the private gymnasia took part in these, and there was much interest evinced by the people in the different items.

II. FIRST AID AND AMBULANCE BY BOYS AND MEN.—This was also an item that was open to the whole State, but the competitors were mainly men from the Military and Police Departments.

III. FOOT-BALL AND OTHER GAMES, LOCAL AND FOREIGN, BY BOYS AND MEN.—These were also open to the whole State and entries were large. The competitions were keen and roused much enthusiasm.

IV. RUNNING, DIGGING, CARRYING LOADS, SPLITTING WOOD, ETC., BY MEN OF THE WORKING CLASSES.—These were also open to the whole State, but the number of competitors was not as large as was expected.

V. CLEANING ROADS AND DRAINS, OPEN GROUNDS, &c.—These items were confined to the Municipal Staff and were keenly contested.

VI. COOKERY, CONFECTIONERY, TEA-SHOPS AND NATIVE HOTELS.—These were also open to the State but only local men had entered the competition.

The Medals, Certificates and other awards in the Exhibition in connection with the different competitions were given away by His Highness the Maharajah Saheb on the closing day

of the Exhibition. While distributing these, His Highness was again pleased to say a few words impressing on the people the necessity of devoting every possible attention to the improvement of health.

Tar Sprayed Roads in Madras.

[BY JAMES R. COATS, B. SC. ASSOC, M. INST. C. E.,
ENGINEER, CORPORATION OF MADRAS.]

“**T**AR SPRAYING,” “tar coating,” “tar painting,” “surface tarring,” are a few of the terms in common use, all meaning the same thing and denoting the application of a thin even coat of tar to the surface of a road. “Tar spraying” appears to be most widely accepted and will probably become the standardised term.

The principal objects in tar-spraying a road are:—

(a) the prevention of excessive moisture from penetrating to the Macadam structure of the road. In this connection it may be mentioned that the quantity of moisture that is required to keep a water-bound Macadam road in firm traffic resisting condition is very small, somewhere in the neighbourhood of 5 per cent. More than this makes the road muddy and if there is less the surface will disintegrate or ravel.

(b) the prevention of dust. With the exception of dust brought on by traffic from side streets, a properly tar-sprayed road will remain practically dustless for a period varying from 6 months to a year depending on local conditions and the intensity and nature of traffic.

(c) the protection of the Macadam underneath from wear. If the tar film is renewed as it wears away, the life of the Macadam structure will be considerably increased.

METHOD OF APPLYING THE TAR.—Tar-spraying should only be done during dry weather. The tar is laid on the surface of an existing water-bound Macadam road. The road

must be in fairly good condition and it is preferable to apply the tar about two months or so after the road has been properly reformed. It is useless to spray an old or half worn out road. Also with regard to the materials available for road making in Madras, it is useless to tar-spray a road formed of laterite, velacheri or pit jelly; good results can only be obtained with a blue granite (gneiss) road in which the proportion of laterite gravel used as a binder is kept down to a minimum. Dealing therefore with tar-spraying the water-bound blue granite Macadam road usually constructed in all the more important streets in Madras city, the first process is to remove all dirt, dust, etc., from the road surface and from the interstices of the stones to as great a depth as possible without loosening the stones in the road. This can usually be accomplished to a depth of $\frac{3}{8}$ to $\frac{1}{2}$ -inch and forms a key for the tar and is done by vigorous sweeping either with brooms or by a rotary sweeping machine drawn by a pair of good bullocks. It is best to have two sweepings and for the first one the road should be moderately watered, just as much water being used as will facilitate the removal of the binder from the interstices of the stones and will keep down the dust but will not loosen the stones in the surface. The second sweeping should be carried out dry to remove the fine dust left after the first wet sweeping and should be done just immediately before the application of the tar. The sweepings should be damped and carted away to the nearest dumping ground as soon as possible after removal.

TAR.—The tar used is coal gas tar and is a waste product obtained from the manufacture of gas from bituminous coal; it is a very complex material and its composition varies considerably even in samples from the same works. Tar is also obtained from the distillation of oil, wood, etc., but coal gas tar is more popularly used, being less variable in its composition than the others. The British Road Board has issued two standard specifications (Tar No. 1 and Tar No. 2) for tar suitable for tar-spraying roads and many manufacturers supply tar

guaranteed to be in accordance with these specifications. With the exception of one or two experiments with proprietary tars, which are more expensive than coal gas tar and which are patented mixtures for which certain advantages are claimed by the manufacturers, only coal gas tars from approved manufacturers guaranteed to comply with the Road Board Specifications have been used in Madras City and have given more or less satisfactory results. At any rate there have been no absolute failures and many pronounced successes. Before being applied to the road surface, the tar should be heated in a suitable pot or boiler to a temperature of about 250° Fah. ; it should not be overheated. It may be applied to the road by means of a brush or by one or other of the machines designed to spray the hot tar on to the road surface under considerable pressure. In Madras the latter method is adopted, the machine used being one manufactured by the "Taroids" Syndicate, London, having a capacity of 500 gallons. It is drawn over the road to be sprayed by a steam road-roller, the tar being kept at the desired temperature by a steam connection from the exhaust of the road-roller. The road wheels of the sprayer are connected by gearing to an air pump which, as the machine is drawn along, provides the pressure which forces the tar through the spraying jets on to the road. The cost of this machine delivered in Madras was about Rs. 5,500 ; it is capable of spraying 5,000 sq. yards per day of eight hours. After the application of the tar, the surface may be immediately covered with a layer of fine granite chippings, granite dust or sand (either sea sand or river sand) whichever is most conveniently and cheaply obtained and surface either lightly rolled or the road may be immediately opened to traffic which is allowed to work the sand or other grit into the tar. In Madras City, the practice usually adopted is to allow the tar to stand for 24 hours or so to harden before the application of the sand, as this appears to require less sand and the coating is more tough and resilient and makes a more acceptable roadway ; also the cost is slightly reduced. The staff required to

manipulate the road-roller and tar-spraying machine is as follows :—

Road Roller

One driver	...	...	Rs. 40	per mensem
One fireman	...	...	,, 20	do.
Two engine coolies	...	...	,, 8 each	do.
Two flagmen	...	...	,, 8	,, do.

Tar Sprayer

One mechanic	...	...	Rs. 40	do.
One fitter	...	...	,, 20	do.
One fitter and cleaner	...	...	,, 15	do.
One cooly	...	...	,, 10	do.

In addition, about 4 or 5 coolies at 6 as. per day are required for carting tar and emptying barrels into the spraying machine. When the tar spraying machine is not actually in use, the staff is given other work to do in the Municipal Workshops.

The cost of tar spraying a road surface in Madras varies considerably and is affected by the width of the road, the condition of the surface, the amount of preliminary sweeping necessary, the amount of traffic, the cost of tar, the cost of sand or granite chips. The second coat usually costs considerably less than the first. In actual practice it has been found that the area of road surface which can be coated by one gallon of tar varies from about 33 sq. ft. to about 55 sq. ft. and the total cost inclusive of all labour and materials varies from Rs. 1-10-0 to Rs. 2-8-0 per 100 square feet.

The following statement gives the details of costs for certain roads tar-sprayed :

Statement showing the cost and the other particulars of the first tarring in the following roads.

Serial No.	Name of Roads.	Length, feet.	Breadth, feet.	Squares.	No. of barrels used.	Cost of tar.			Cost of sand or grit utilised.			Sweeping charges.			Total cost.		
						Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
1.	South Beach Road from Napier Bridge to Pycroft's Road ..	3,980	73½	2,853	182	3,947	12	5		Nil.		2,139	12	0	6,087	8	5
2.	Mount Road from Blacker's Road to Patter's Road ..	1,600	70½	1,129	60	1,368	9	6	319	15	1	846	12	0	2,535	4	7
3.	Mount Road from Messrs. W. E. Smith to Binny's Road (West).	2,100	35	735	45	936	7	9	242	4	7	131	4	0	1,310	0	4
4.	Mount Road from Messrs W.E. Smith to Binny's Road (East portion) ..	2,550	40	1,020	70	1,614	11	10	182	7	10	765	0	0	2,562	3	8
	Grand Total ..					7,867	9	6	744	11	6	3,882	12	0	12,495	1	0

Statement showing the details and cost of tarring Pantheon Road between Anderson Bridge and Police Commissioner Office Road.

Name of Road.	Length.	Breadth.	Area.	Squares.	Quantity of tar (Barrels).	Rate.			Amount.			Quantity of Granite dust.	Cost of Granite dust.			Labor.		
						Rs.	A.	P.	Rs.	A.	P.		Rs.	A.	P.	Rs.	A.	P.
Pantheon Road	1,000	45	45,000	1050	79	20	4	0	1599	12	0	C.ft. 1872	243	5	9	184	0	0
Do.	2,000	30	60,000															

Statement showing the cost and the other particulars of the second tarring in the following roads.

Serial No.	Name of Roads.	Length. feet.	Breadth. feet.	Squares.	No. of barrels used up.	Cost of tar.			Cost of sand utilised.			Sweeping charges.			Total cost.		
						Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
1.	South Beach Road from Napier Bridge to Pycroft's Road ..	3,880	73½	2,853	119	2,409	12	0		Nil		2,139	12	0	4,549	8	0
2.	Mount Road from Blacker's Road to General Patter's Road	1,600	80	1,286	88	1,782	0	0	34	1	4	960	0	0	2,776	1	4
3.	General Patter's Road from Mount Road to Wood's Road.	2,000	40	800	36	729	0	0		Nil		630	0	0	1,329	0	0
4.	Mount Road from Messrs. W. E. Smith & Co., to Messrs. Spencer & Co. ..	2,500	65	1,625	97	1,924	4	0	55	8	6	1,218	12	0	3,238	8	6
	Grand Total ..					6,845	0	0	89	9	10	4,918	8	0	11,893	1	10

Tar spraying in Madras has not yet been carried on for a sufficiently long time to enable very accurate deductions to be drawn as to the actual prolongation of the life of any particular road by tar spraying nor is it yet possible to make any very accurate general statement in terms of time as each particular road must be considered by itself because the nature and volume of traffic which is the most important factor varies so greatly on different roads. There can be no doubt that tar spraying does increase the life of a road and this is very obvious on the section of Mount Road from Vizianagram Fountain to Government House Bridge, the tar surface of which is being tested to destruction. The portions of the surface on which the tar still remains are much higher in some cases as much as an inch or even more than the adjacent portion of the surface from which the tar has been worn or removed showing conclusively that the tar protects the road and prevents wear and abrasion. It is apparent to even the most casual observer that a tar sprayed road is much less dusty than an unsprayed road and this is clearly exemplified in the case of the Marina. The southern stretch of the Marina from St. Thome to Pycroft's Road is not tar sprayed and is very dusty while the northern stretch from Pycroft's Road to Napier Bridge which is tar sprayed is comparatively free from dust and would be practically dustless if it were not for the sand carting operations which are carried on to a considerable extent at this end of the Marina. A tar sprayed road does not require to be watered; in fact, watering is objectionable and there is a saving of expenditure under this head. All that is required is an occasional sweeping up of dust and sand not produced by the road itself but brought on by traffic from unsprayed side roads and other sources. To give a very general idea of the relative costs of tar sprayed roads and non-sprayed roads, it may be stated that there are 300 miles of roads within the Municipal limits and about 60 miles of roads are reformed each year so that on a broad average a road lasts 5 years. Some last longer, some less, especially the busy

roads and those are the roads which may be tar sprayed and may be taken to require reform every four years if they are not tar-sprayed. The cost of reforming a mile of road 20 feet wide works out about Rs. 4,800 and considering a period of 24 years the cost during that period of maintaining an unsprayed road would be $6 \times$ Rs. 4,800 or Rs. 28,800 or Rs. 1,200 per mile per annum, excluding minor repairs. A tar sprayed road to be kept in good condition must be re-sprayed annually and if properly attended to, would only probably require complete reform twice in a period of 24 years. On the average the cost of tar spraying a mile of road 20 feet wide amounts to about Rs. 2,000 so that the annual cost of maintaining a tar sprayed road would be

2 complete reforms at Rs. 4,800 each	Rs. 9,600
24 sprayings at Rs. 2,000 each	Rs. 48,000
	<hr/>
	Rs. 57,600

or Rs. 2,400 per mile per annum, or practically twice the cost of a non-sprayed road. The advantages, however, are all on the side of the tar sprayed road. There is a saving in road watering which has not been taken into account; there is much less dust, the road surface does less damage to tyres of vehicles. Although the road has to be sprayed annually, this does not take long and there is less interference with traffic than in the case of a road which has to be completely reformed every four years.

The Corporation of Madras.

II. Decentralization.

[BY RAO BAHADUR V. ALWAR CHETTY, B.A.,
PROVINCIAL FOREST SERVICE.]

I CONCLUDED my previous article by saying that the present excessive centralization of work and responsibility appeared to be a serious evil in the civic administration of the city. I fear that the evil is not adequately realised; it

injurious effects are more far-reaching than one is apt to imagine ; and as no scheme of improvement would, in my opinion, be really satisfactory which does not provide for a large measure of decentralization in matters which could well be left to divisional councils, I would go at some length into a statement of the vice of the present system, so that its correct dimensions may be understood.

As matters now stand, the smallest derangement of the machinery of administration has to be reported to the central authority and in many cases repeated complaints have to be made before a remedy is applied, and not infrequently the remedy applied is ineffective because of the lack of interest of the subordinates who usually take complaints as personal affronts and revenge themselves by doing the minimum possible consistent with their safety. The most obvious instance which could be mentioned is the inefficient sweeping of the smaller streets and lanes. I am told that the sanitary staff employed for sweeping purposes is strong enough to sweep all public streets and lanes. But it is notorious that the major portion of the smaller thoroughfares are *not* systematically cleaned. The accumulation of filth and rubbish at corners is a familiar spectacle, and probably on account of its very familiarity people fail to perceive that it should not be. If a complaint is sent from an outlying ward on this subject to the central authority, the result as often as not is a worsening of the state of affairs ; the complainant is not infrequently jeered at by the petty municipal subordinate against whom the complaint has been made. Surely, a local council could attend to this work of supervising the sweeping of streets much more effectively than a central organization. A similar remark would apply to the condition of the smaller roads. I believe there is provision for the maintenance of all public roads, but nobody would contend that the maintenance is being well done in regard to the smaller arteries of communication. I have no complaint against the main ways. They are as well maintained as could be expected under the

difficult climatic conditions of a city like Madras. But the condition of the smaller streets is often a source of inconvenience, not so much on account of their intrinsically general bad condition, but on account of the time taken to mend particularly bad bits. Should a hole develop in one of these small thoroughfares, it has every chance of being allowed to exist for several weeks. There is, I fear, no systematic inspection of the smaller arteries by the municipal staff; nor is probably such an inspection possible. A local council entrusted with the task of maintaining the smaller streets and lanes is bound to do it much more satisfactorily than a central authority. Similar remarks would apply to the cleaning of open drains where they exist, and to street lighting.

The absence of local bodies is most felt in the department of education. The Corporation has over a dozen elementary schools and I am told that it is in contemplation to work up to about 50 of them. All these will work under the central authority; the local residents would have no interest in any school. A matter like elementary education, in which it is so vital to stimulate local interest, would languish for lack of that interest. I could indefinitely multiply cases. I could give numerous instances of matters which are essentially things of detail where management by a local body is bound to be more efficient than that by central authority. At present the situation is this. The whole body of citizens are in the position of permanent complainants whose ambition is partly to escape taxation and partly to get as much done for themselves as they could manage out of other people's money.

I am of course aware that there is such a thing as a periodical election of commissioners and a new commissioner generally gets in by making promises which under present conditions he should know it is not possible for him to fulfil. But the unfortunate rate-payer has no remedy. If one set of commissioners is unseated and another is put in, the result cannot alter, and will not alter unless the whole machinery is recast on lines of decentralization.

One obvious criticism I may myself mention : that, in proposing divisional councils to manage local details of administration, I am proposing far too drastic a change and that my scheme will be ruled out of order as beyond the range of practical politics. To this my reply is that grave evils need drastic remedies and that the evils due to the present system of excessive concentration are far too deep-seated to be obviated by such remedies as an increase of taxation, an increase of the municipal staff, an improvement in the pay and prospects of the latter, a reconstitution of this or that committee, increased powers to the Corporation as a body, and last even by increasing the number of elected commissioners.

I shall now briefly outline the constitution and functions of the divisional councils I would create. At present we have twenty divisions. I would have 20 councils. The strength of a council should not be less than 5 and it need not exceed 10, and all the members should be elected. The divisional commissioner should be *ex-officio* chairman and chief executive officer of the divisional council. I would assign to the council the following duties :—

(1) maintenance of the smaller roads and streets, the main thoroughfares being reserved for the Corporation,

(2) lighting as above,

(3) sweeping all thoroughfares large or small, the duty of the local councils ending with depositing the rubbish in the sweeping grounds assigned to them for the purpose, the disposal of all sweepings remaining with the Corporation,

(4) supervision of local markets, large central markets, such as the Moore Market, remaining with the Corporation,

(5) similarly as regards cartstands and slaughter houses, a central slaughter house such as that at Perambur remaining with the Corporation,

(6) the maintenance of small parks, recreation grounds, etc., the Peoples' Park and the Marina remaining of course with the Corporation,

(7) the maintenance of dispensaries, hospitals such as that at Royapettah remaining under the Corporation, and

(8) the management of elementary schools.

I shall devote a separate paragraph to the vexed question of distribution of water. In regard to this, there are two sets of complaints. The Corporation executive constantly complain that there is a great deal of waste of water and they attempt, not quite effectively, to meet the evil by various devices such as meters, smaller taps, etc., the absence of the co-operation of the public, or rather the absence of any incentive to co-operate, being the great drawback in dealing with the problem. There are also complaints the other way. In some divisions there is a marked dearth of water, due probably to higher levels, etc., but the evil is there. Would it not conduce to efficient administration if some arrangement were made by which the water supply to a whole division was metered, the supply being regulated with reference to population? Should a division consume more than what it was entitled to according to the above standard, the divisional council should pay for the excess. This would localise and thereby strengthen responsibility, and the bickerings as between different divisions—that some are more favoured than others—would cease. It would be for each council to see that there is no waste within its area and this should be an easier method than it now is for the Corporation to deal with the whole city.

I propose to deal in a future paper with the question of financing the divisional councils, that of their relations with the Corporation, financial as well as administrative, and also the general question of Corporation taxation and the development of the Corporation revenue.



The Value of Municipal Exhibits.⁺

[BY LENT D. UPSON, DIRECTOR, DAYTON BUREAU
OF MUNICIPAL RESEARCH.]

“GET the Hook,”—three words of no special significance, yet when placed upon a chart above a six-cent hook for which the city of New York paid 60 cents, did more to stimulate public concern in methods of government than would 100 municipal reports, replete with questionable statistics. With this feature at the 1st municipal exhibit, held in New York city in 1908, was begun a new method of making municipal government a concrete reality to the man on the street.

In this period of the open shutter in public affairs, the most perplexing problem of Municipal administration is that of interesting the citizens even in special programmes, not to mention familiarizing them with the ordinary details of local government. The extraordinary progress in methods of sanitation, finance, and other municipal functions, necessitates that Government continuously inform the tax-payers and secure their co-operation if Governmental measures are to keep pace with the possibilities or even the necessities of present-day life. For example, in a western city, “the summer hump” in the death-rate of babies has been practically eliminated by adequate health service; yet the public is only slowly becoming reconciled to the visiting nurse, and beginning to learn that this work is a legitimate public function. Concretely, the activities of the city can only keep pace with the social-mindedness of the citizens.

Realizing that the cumbersome reports filled with unintelligible and inaccurate statistics not only fail to arouse the citizen, but destroy potential interest, the Bureau of Municipal research in 1908 hit upon the happy thought of presenting new needs and old ideas to the New York public in visualized

* From the American National Municipal Review.

form. The abovementioned "Get the Hook" Chart was only one of hundreds of such plain statements illustrated, which impressed upon John Smith, in primer language, the way his money is being spent by officials he helped to elect.

Since the first experiment in New York, followed by two exhibits financed by the municipality itself, this novel publicity method has been used successfully in practically every section of the country. They are not political but economic, designed to show as a physical budget lesson, the use of public funds whether spent for a cake of soap or a million dollar water plant to kill disease germs or for a modernized fire division. Not only through figures made intelligible by comparative charts and photographs, but by the actual operation of city departments is the public educated in the prevention of graft and waste, and in community activities and community needs. Citizens who have never been in a fire house see in actual use the delicate instruments, which protect them from fire waste, are impressed with the relative costs of oats and gasoline as motive power for fire apparatus, and learn that fire protection is a most expensive function, necessary because of public indifference and common carelessness. The citizen who has quarreled with the department over a water bill can here definitely visualize the annual personal cost of a leaky faucet and the immense public extravagance of leaky mains.

Truly, administrators may color their exhibits from personal interest but this is not less possible with printed city reports. The exhibitor cannot keep the public from learning how departments are operated and from comparing their operations with the methods of others. Again, the exhibitor cannot but secure stimulation for his own work, from the interest which another citizen may show in how that work is done. On the whole, there are no axes which can be sharply ground, no cheap politics to play,—it is simply carrying out the idea that a citizen "who knows" will not cheat himself nor allow himself to be cheated by the man he has placed in public office.

Any citizen with sufficient interest and half his lunch hour to spend may, through this opportunity, learn what the city is accomplishing with the tax-payer's dollar and what it has planned to do in the year or years to come.

The expansion of the exhibit idea has been notable. Out of the little show held in New York in 1908, under private auspices, which 62,808 persons attended, came the appropriation of \$25,000 for the first New York exhibit in 1910. Here 45,000 square feet of space in three floors was taken up with 350 booths which had an elementary demonstration of how the operating budget of \$163,000,000 a year was spent and incidentally why \$200,000,000 was being requested for the year following. In the first two days, 100,000 visitors had seen the exhibit, and the total number for the whole period was over 1,000,000. The attendance the year following was even larger than this, 700,000 school children receiving personal invitations to be the guests of the city.

The second largest shows after the New York exhibition were those held in Cincinnati in 1912 and 1913. The first of these was to urge upon the public the necessity for an increase of taxes if even the ordinary functions of government were to be continued, not to mention the social and welfare activities which the progressive administration had added. The second exhibit was again devoted almost entirely to the idea of interesting the public in the support of the advance measures of government which had been instituted. Both of these exhibits were open only two weeks, during which time an average of 150,000 people attended and each cost approximately the same as the 1300-page annual reports published by the city.

Cincinnati had for a score of years been maintaining in office, men who did not believe in the publicity of governmental affairs. It was therefore believed that a determined campaign of advertising would be necessary to arouse public interest in this new form of city reporting. Speeches were made before every organization that would listen ; interested merchants

placed slips advertising both the exhibits and the city's tax needs in their monthly statements; each water bill carried into the home a label telling the story; and street car advertising was used extensively during the time of the show. An effort was made to interest the ministers of the city in the fact that if the social work of the city was to be efficiently advanced the administration must be supported in the demand for public funds. As a result nearly one-half of the clergy in the city preached a sermon on the relation of the church to unmet community needs, and many more carried announcements of the opening of the exposition in the church calendars or announced the event from the pulpit.

During several hours each day the congestion was so great that the purpose of the show was in a measure defeated. There was, with one exception, no music, nothing dramatic, nothing given away, yet in the evening automobiles were parked for a block in front of the hall, and millionaires, labourers, politicians and reformers rubbed shoulders, in an effort to see where their tax dollars were going. Thousands of school children came in classes with their note books. Urged by substantial prizes for the best essays on how the school child could help the city government, the exhibit became a matter of study, rather than of idle curiosity. In place of text-book theories the municipality suddenly became a reality of streets and lighting; of big mercantile projects; of extensive charities; of a management marked with both great efficiency and inefficiency. Public officials became interesting men who were more than willing to explain the details of their departments, and whose interest in their work was augmented by the public interest in it.

The educational value of this exhibit may be seen in the attitude of the public to the proposal for an increased tax which having been granted by a bare majority the previous year, was renewed by a vote of almost two to one. But whether this levy had been granted or not, the public cannot but have been favourably impressed with the fact that there

has been a municipal "show down" cannot but take a keener interest in matters of their intimate concern.

At least with thousands of school children there will be the memory that at one time their city took them into its confidence, establishing a precedent which public opinion may demand to be followed.

In more recent times some notable exhibits have been held in New York City, Pittsburgh, Hoboken, Jersey City, Cincinnati, Ossining, The Oranges, New Jersey, Dobbs Ferry, New York, Springfield, Massachusetts, and Westfield, New Jersey.

Aside from the direct contact of the citizen with the exhibit, such a programme affords methods of municipal publicity which can be secured from no other source. One finds here hundreds of citizens thinking of the same subjects in the same terms. It is self-evident that they will think more intensely, more vividly, more earnestly, as a group than they will as individuals. Such a show invariably moves the city hall, from the last page of the newspaper to the front page. Prominent people who must be adequately reported, come to make speeches at the noon hour and in the evening, politicians of both the sides make use of it, nearly all cities send their officials who must carry home the impression of better government and the stimulus of interest. In Cincinnati the exhibit justified the personal invitations of prominent citizens and the invitations to out-of-town men of prominence. The result was a large amount of out-of-town publicity which worked its way back and had a local influence through the heightening of local pride. The preparation of an exhibit itself has a value in the increase of the number of sentiment centers in the interest of better government. The fight is conducted from a score or hundreds of points instead of from the mayor's office. Every employee whose work is described becomes a missionary whether he wants to or not. One of the most interesting phases of the New York and Cincinnati work was the price of the departmental employees in the

activities of their own departments shown in the exhibit. Emphasis has already been given to the possibility of enlisting the interest of a large number of civic and private agents who can contribute to the city's efficiency, improvement associations, churches, schools, women's clubs, all of whom can be reached to help the city without regard to partisan interest.

Originally the municipal exhibit was a presentation of the activities of the municipality as a whole. It has now developed to a point where certain phases of municipal and social work are being even more commonly exploited, particularly those of welfare and hygiene. Perhaps this is because these phases of work are most important and are less appreciated by the public. The complete development of this field, however, has not yet been reached, and it is to be anticipated that the time will shortly come when every progressive city will place before the public a picture of city work in simple, interesting and comprehensible terms. It is then that we may expect efficient citizenship to become a proper factor in efficient government.

The Bombay Town Planning Act, I of 1915.

THE Bombay Town-Planning Act (Bombay Act I of 1915) had its origin in Salsette, an island about 18 miles long, lying immediately to the north of the Island of Bombay. Plague in Bombay caused a rapid increase in the popularity of parts of Salsette as a suburban resort. Numerous houses were built in the vicinity of the Railway Stations where there were often no local authorities to control building. In many cases the houses were built in the fields, with no road access. The local bodies which were constituted round all Railway Stations could not afford to supply and maintain all the necessary roads. Hence a Town Planning Bill was framed which, while giving adequate power to control

development, would at the same time aid local authorities in enabling them to recover from landowners a special contribution towards the cost of roads and other works which would specially benefit them. Another object of legislation was to facilitate the formation of plots suitable for building purposes. It is proposed to indicate here the main features of the Act which has just been passed.

Under the Act a local authority may, for any definite area within its jurisdiction, frame a town-planning scheme. The scheme may set apart sites for roads, open spaces, schools, markets, and public purposes of all kinds, and may lay down regulations regarding the number and character of buildings allowed in specified parts of the area included in the scheme, suspending any by-law or legal provision which would conflict with the scheme. This reservation of land in advance of development will, apart from various other advantages, save local authorities the heavy expenditure which now commonly has to be incurred in acquiring sites which have assumed high values as a result of development.

In addition to this anticipation of future needs, a town-planning scheme may consist partly of the actual carrying out of works. Roads and bridges may be constructed, and land may be definitely allotted to the local authority or Government. This expenditure accounts for the greater part of the costs of a scheme.

There is one other important object of a town-planning scheme. The size and shape of agricultural holdings are often extremely unsuitable for building purposes. A man may have a plot whose actual area is large enough for a bungalow but which has such an awkward shape that no building, with its concomitant need of surrounding open air space, can be suitably fitted in. The contiguous plots will also very likely suffer in a similar way from the uneven boundaries. A town-planning scheme may straighten out and re-adjust boundaries so as to provide good building sites. As the Act requires that

owners shall be consulted at every stage, this formation of new plots should be done in accordance with the wishes of the respective owners. The rises in values which result go to reduce the costs of the scheme, so that the local authority derives some benefit from its efforts in improving boundaries.

The recovery of contributions from owners is arranged on an equitable basis. Every man has to give up a share of the increase which the scheme causes in the value of his property. To take an instance, suppose that before the scheme is framed an owner has one or more plots whose total market value is Rs. 2,000. The scheme is going to re-adjust his boundaries, and some of his land, we will suppose, is wanted for a road or other public purpose. On the other hand, he may be allotted a useless small plot belonging to some other owner. Suppose that the value of his land, on the supposition that no road is constructed or other improvement effected except re-adjustment of boundaries (in the words of the Act "without reference to improvements contemplated in the scheme other than improvements due to the alteration of boundaries"), would be Rs. 1,800. Now the scheme may give him road access where he had none before, his property may benefit through the setting apart of a recreation ground or a school site close by, or drainage or water supply may be provided. Suppose that after the scheme is completed his land would be worth Rs. 2,500. His increment is Rs. 700. The local authority, in order to meet the costs of the scheme, may take a percentage of every man's increment. The percentage will be the same for every owner in the scheme, but under the Act it can never be more than 50%. If this 50% does not provide all the costs, the local authority must find the excess. Suppose that in our example the proportion taken is 40 %. The owner whose increment is Rs. 700 will be debited with Rs. 280. But he must be credited with Rs. 200, the difference between Rs. 2,000 and Rs. 1,800 representing the value of land he has given up. Thus he will have to pay Rs. 80 net. It goes without saying that in

some cases the local authority may have to pay an owner something instead of recovering a contribution. Where the net contribution to be recovered from an owner is large, a local authority can, under the Act, arrange to collect it by instalments.

A word must now be said about procedure. The Act applies only to Salsette in the first instance. It can be applied by a Government Notification to any other part of the Bombay Presidency, but in the City of Bombay cannot be applied except on the application of the Corporation and with the consent of a majority of the members of the Corporation.

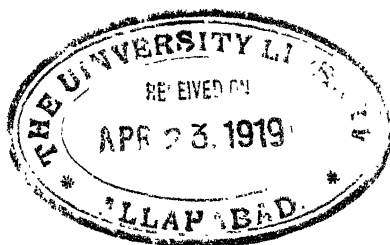
The first step, after the application of the Act in general to a locality is secured, is taken by the local authority, which must pass a Resolution declaring its intention to make a town-planning scheme for some area within its jurisdiction. Before any further action is taken, the sanction of Government for the making of the scheme for that particular area must be obtained. Within 12 months of the granting of such sanction, the local authority must prepare a draft scheme in detail, with an estimate of the net cost to be borne by the local authority. This draft scheme must be published by the local authority, and objections must be invited. Then the draft scheme is submitted to Government for sanction.

Government, on sanctioning a draft scheme, appoints an arbitrator whose duty it is to demarcate all allotments made by the scheme, to do all necessary valuation of plots and increments, to calculate the contributions to be made by owners, and to draw up the final scheme.

Many of the decisions of the arbitrator are final, but certain matters have to be placed by him before a Tribunal of Arbitration. This Tribunal consists of the District Judge (or, in the City of Bombay, a High Court Judge), the arbitrator, and an impartial person appointed by the District Judge (or the High Court Judge, as the case may be). This Tribunal

has to deal with the estimates of increments, the percentage of increment which should be collected by way of contribution to the costs of a scheme, and the compensation to be paid to the owner of any property or right injuriously affected by the making of a town-planning scheme. There is no appeal from the decision of the Tribunal.

When the Tribunal has finished its work, the scheme has to go to Government for final sanction, and, on receiving such sanction, has effect as if it were enacted in the Act.



Local Self-Government Policy of the Government of India.

*Resolution of the Government of India, Department
of Education (Municipalities), Nos. 55-77,
dated 28th April, 1915.*

LOCAL SELF-GOVERNMENT as a conscious process of administrative devolution and political education dates, outside presidency towns, from the financial reforms of Lord Mayo's government. Consultative committees had indeed been appointed in various towns in 1850, and measures were taken in 1864 and following years to give effect to the recommendations of the report of the Royal Army Sanitary Commission, which was published in 1863, but no comprehensive scheme was introduced until the years following 1870. Legislation affecting several provinces was then undertaken. Lord Ripon's government in 1882 carried still further the principles of local self-government with the object, by measures cautiously but substantially progressive, of inducing the people themselves to undertake, as far as might be and subject to necessary control from without, the management of their own local affairs, and of developing and creating, if need be, a capacity for self-help in respect of all matters that had not, for administrative reasons, to be retained in the hands of a representative of Government. Various Acts were passed, by which the elective principle, financial independence and the reduction of official control were given a wide extension. In two resolutions Nos. $\frac{1}{146-164}$, dated the 24th October, 1896, and Nos. 18-37, dated the 20th August, 1897, respectively, Lord Elgin's government again reviewed the subject and laid down further conditions of progress. Important principles have, from time to time, been considered by the Government of India in connection with the revision of local self-government Acts and otherwise, and recently the whole field of policy has, in their survey of Indian administration, been ably and exhaustively reviewed by the Royal Commission upon Decentralization.

2. The Governor-General in Council is glad to be assured by the report of the Commission and the Substantial progress. opinions of local Governments and Administrations upon it, that the results have on the whole justified the policy out of which local self-government arose. The degree of success varies from province to province and from one part of a province to another but there is definite and satisfactory evidence of the growth of a feeling of good citizenship, particularly in the towns. The spread of education is largely responsible for the quickening of a sense of responsibility and improvements in the machinery. In certain provinces, beneficial results have followed the elaboration of a system of local audit. On all sides there are signs of vitality and growth.

3. The obstacles in the way of realising completely the ideals which have prompted action in the Future general policy. past are still, however, by no means inconsiderable. The smallness and inelasticity of local revenues, the difficulty of devising further forms of taxation, the indifference still prevailing in many places towards all forms of public life, the continued unwillingness of many Indian gentlemen to submit to the troubles, expense and inconveniences of election, the unfitness of some of those whom these obstacles do not deter, the prevalence of sectarian animosities, the varying character of the municipal area, all these are causes which cannot but impede the free and full development of local self-government. The growing demand among the educated classes in towns for greater efficiency, involving more direct expert control, in matters affecting public health and education, is a further influence of a different character. A similar tendency, it may be observed, is discernible in England and in other European countries, the Governments of which have shown a growing disposition to place on central authorities the duty of stimulating and encouraging local bodies in cases of default or deficiency on their part, and to give to the former powers of intervention

and, in case of need, of actual supersession of the latter. These and similar considerations indicate the need for caution in delegating powers to non-official bodies, when they are not as yet adapted nor prepared for them. But on the whole the Government of India declare unhesitatingly in favour of a general policy of further progress, limited only by such conditions as local circumstances may dictate. Uniformity, even were it attainable, would be undesirable as tending to monotony, lifelessness and discouragement of new experiments. But, in fact, any attempt to exact uniformity in local administration would be foredoomed to failure. In each province, sometimes in each part of a province, the administrative system has grown up on lines of its own with reference to local needs and the wishes and abilities of the people. On a review of all the circumstances, the Government of India have decided to accept in almost every case the conclusion of the local Government or Administration as to the degree of progress possible at the present time. But in the more backward provinces in particular, it is their conviction that there is room for advance, and that the aim to be steadily pursued is abstention from interference in detail and increased reliance on the non-official element in local bodies.

4. Local Governments and Administrations in general are prepared to advance in the direction of the main recommendations of the Commission. They propose in varying degrees to expand the electoral elements in the constitution of local bodies, to extend the employment of non-official chairmen in municipalities, to allow local bodies more ample control over budgets and freer powers of reappropriation, to concede increased authority to local bodies over establishments and to relax existing restrictions in regard to outside sanction for expenditure on works of importance. These changes will mark a real and immediate extension of the principles of local self-government.

5. The Government of India now propose to state the principal conclusions that have been reached after full discussion in the public press, in debates of the Legislative Councils, and in consultation with local Governments and, in certain matters, with His Majesty's Secretary of State, on the questions that arise respecting (1) towns, (2) districts, (3) villages or other small local areas; in other words, in relation to (1) municipal boards, (2) district and sub-district boards, and (3) panchayats or other unions. In each case they will consider the constitution of the local body, its ability to tax and its powers in regard to its budget and its establishment. Finally, they will deal with the recommendations of the Commission in connection with presidency towns and Rangoon.

Municipal Boards.

6. The Commission recommended that municipal boards should ordinarily be constituted on the basis of a substantial elective majority, and that nominated members should be limited to a number sufficient to provide for the due representation of minorities and official experience. This recommendation has already been adopted in several provinces and is generally accepted by local Governments and the Government of India subject to the proviso that the principle should in places, where its success is doubtful, be introduced gradually, and after experiment in selected municipalities.

7. The Commission also proposed that the Municipal Chairman should usually be an elected non-official, that Government officers should not be allowed to stand for election, and that where a nominated chairman might still be required, he should be an official. The following statistics show how in the different provinces chairmen of municipalities are at present secured :—

*Number of chairmen of municipalities, elected and nominated,
officials and non-officials.*

Province.	Elected non- officials.	Elected officials.	Nominated non- officials.	Nominated officials.	Total.
Madras	38	2	15	8	63
Bombay	53	37	3	60	153
Bengal	74	10	8	19	111
United Provinces	20	34	13	11	84
Punjab	15	77	1	11	104
Burma .. ..	..	41	..	4	45
Bihar and Orissa	7	7	5	36	55
Central Provinces and Berar	12	36	..	8	56
Assam	3	4	..	8	15
North-West Frontier Province .. ..	..	..	..	6	6
Coorg .. ..	..	..	..	2	2
Delhi .. ..	..	..	..	1	1
Total ..	222	248	51	174	695

8. The majority of Local Governments are in favour of substituting, so far as possible, non-official chairmen. official for official chairmen, and the Government of India are in full sympathy with the proposal. The increasing burden of administration, apart from other considerations, renders it desirable that the district officer should be relieved of the executive control of municipal bodies. The Governor-General in Council recognises, however, that the change must be made gradually, and that in the absence of suitable candidates, it may not be possible to make it finally and once for all in particular places. He agrees with the opinion expressed in several quarters that discretion should be reserved to a local Government to nominate a non-official as chairman. Many gentlemen of influence, well fitted to be chairmen of boards, are not prepared to offer themselves for election and insistence on election as the only alternative to the nomination of an official would unnecessarily narrow the field of choice. Nor does it appear necessary to prohibit boards under any circumstances from electing an official as their chairman. It may be desirable, however, to require the election of an official as chairman to be confirmed by the Commissioner, or even higher authority.

9. The Commission suggested that some of the largest cities should adopt the system in force in Bombay city, where there is an elected chairman, who is the official mouthpiece of the corporation as a whole, the executive administration, however, vesting in a full-time nominated official subject to the control of the Corporation and of a standing committee thereof. In the Bombay District Municipal Act, 1901, also, there are provisions under which a Chief Officer can be appointed by a city municipality, on its own initiative or at the instance of the Governor in Council. The Governor in Council may also appoint an executive officer known as the Municipal Commissioner for any municipal district which contains one-hundred thousand inhabitants, or for any other municipal district on the application of the municipality, provided that such application has been previously supported by not less than two-thirds of the whole body of Councillors. A Municipal Commissioner has in some respects more extensive powers than a Chief Officer. Under this arrangement the direction of the general policy of a municipality vests in the whole body of councillors, while the executive power, with certain reservations, vests in the Municipal Commissioner. The municipal committee may cause him to furnish any returns and reports on matters appertaining to municipal administration and they retain financial control. The Chief Officer or Municipal Commissioner is not removeable, except by order of the Governor in Council, or by the vote of three-fourths of the whole number of councillors. These officers exercise certain executive powers specifically conferred on them by the Municipal Act, and such other powers as may be delegated to them under the provisions of the Act; and the Governor in Council may require that they shall be invested with any powers which can be lawfully delegated. The system works well in Bombay. The Government of India do not desire to press for its adoption in provinces where it may not be suited to the local conditions. They are, however, of

The Bombay system in larger municipalities.

opinion that it has the advantages of ensuring a continuous and strong executive administration by an efficient paid staff, while maintaining the corporate control and activity of the municipal board. It is in fact not dissimilar to the system in force in England. They commend it to Local Governments as a means of overcoming, at any rate in large cities, the difficulties inherent in the introduction of the important changes contemplated, especially when non-official chairmen are busy professional men. In smaller towns they suggest that the object aimed at might be attained by the wider delegation of executive functions to responsible secretaries, engineers and health officers and that power to enforce such delegation might be secured by legislation.

10. The aggregated income of 701 municipalities in existence at the close of 1912-1913 (excluding the presidency towns and Rangoon) amounted to £ 3,282,845 (Rs. 4,92,42,675) apart from loans, sales of securities and other extraordinary receipts or an average of about £4,683 (Rs. 70,245) a year. This income was distributed as follows:—

	£
Madras	454,908
Bombay	586,054
Bengal	339,970
United Provinces	592,321
Punjab	435,039
Burma	292,524
Bihar and Orissa	145,270
Central Provinces	177,496
Berar	37,594
Assam	34,764
North-West Frontier Province	72,560
Coorg	3,700
Delhi	110,566*

£ 3,282,845 (Rs. 4,92,42,675)

The following further statements show the proportions under various heads of municipal income and expenditure respectively in the different provinces for the year 1912-1913.

* NOTE.—The figures are abnormal on account of large grants from Government during the year.

Income.

Province.	Percentage of total income from Municipal rates and taxes derived from								Percentage of total income excluding loans and advances derived from				
	Octroi.	Tax on houses and lands.	Tax on animals and vehicles.	Tax on professions and trades.	Tolls.	Water rate.	Conservancy tax.	Other taxes.	Taxation.	Under special Acts.	Municipal property.	Grants from Government and other sources.	Miscellaneous.
Madras	..	45.0	10.2	8.6	19.0	16.8	..	0.4	44.0	0.3	15.1	36.4	4.2
Bombay	46.9	16.3	3.2	0.3	4.5	16.9	8.0	3.9	62.6	0.5	16.4	17.1	3.4
Bengal	..	37.2	5.5	1.8	2.1	13.9	25.1	14.4	75.8	2.1	8.4	11.5	2.2
United Provinces	69.2	5.4	1.0	3.8	2.8	6.6	1.1	10.1	62.8	1.6	19.7	13.6	2.3
Punjab	89.7	6.8	0.8	..	..	1.3	1.2	0.2	63.1	0.8	19.3	13.7	3.1
Burma	..	42.5	3.7	..	14.0	9.2	20.6	10.0	38.1	1.1	42.3	17.2	1.3
Bihar and Orissa	1.7	40.7	9.5	1.8	5.6	3.5	21.6	15.6	62.5	1.4	9.9	25.1	1.1
Central Provinces	61.6	3.3	4.3	0.1	1.2	15.3	10.9	3.3	60.3	2.7	16.3	16.4	4.3
Berar	..	20.7	4.3	26.8	10.4	4.6	20.5	12.7	47.9	8.2	13.5	29.5	0.9
Assam	..	40.5	7.6	..	9.9	11.6	22.1	8.3	36.8	4.0	10.8	47.3	1.1
North-West Frontier Province	98.0	0.6	0.1	..	..	1.2	0.1	..	42.1	0.2	15.9	41.1	0.7
Coorg	..	62.7	3.9	18.9	7.1	7.4	..	..	28.7	2.6	11.9	56.8	..
Delhi	8.02	13.1	4.8	..	1.9	..	..	..	38.5	0.3	19.8	39.5	1.9

Expenditure.

Province.	Percentage of Municipal Expenditure on							
	General admini- stration.	Public safety.	Water-supply and drainage.	Conservancy.	Public Works.	Other measures for public health and convenience.	Public instruction.	Miscellaneous.
Madras	6.9	4.2	10.5	20.3	27.6	13.2	10.2	7.1
Bombay	8.5	5.2	25.1	14.1	14.3	10.5	15.2	7.1
Bengal	7.2	6.9	24.7	25.8	16.4	7.5	3.3	7.2
United Provinces.	10.2	6.0	27.7	17.2	13.9	6.2	4.5	14.3
Punjab	12.0	6.1	16.8	13.8	15.5	15.9	10.6	9.3
Burma	10.1	6.6	10.7	19.3	18.3	25.5	4.3	5.2
Bihar and Orissa	8.2	5.5	12.7	28.3	15.7	21.9	2.0	4.7
Central Provinces	11.1	3.2	30.4	15.9	10.3	11.9	10.2	7.0
Berar	9.4	4.6	24.4	21.6	8.9	10.5	18.3	2.3
Assam	5.7	3.8	32.6	23.3	19.4	7.9	4.2	3.1
North-West Frontier Province	10.8	7.4	11.1	15.5	13.7	21.3	14.3	4.9
Coorg	10.8	3.4	1.6	19.3	9.6	8.4	16.5	30.4
Delhi	7.4	4.0	33.5	18.0	10.9	11.0	1.8	13.4

11. The taxes, tolls and fees which may ordinarily be levied by municipalities are provided for in the municipal enactments in force in the different provinces. They are imposed in most cases with the previous sanction of the local Government concerned and within the limits laid down in the Acts. They usually take one or other of the following forms :—

Taxation.

(1) Tax on arts, professions, trades, callings, offices and appointments.

(2) Tax on buildings, lands and holdings.

(3) Water, drainage, sewage, conservancy, scavenging and lighting tax.

(4) Tax on vehicles, boats, palanquins and animals kept for use or used within municipal limits.

(5) Tax on circumstances and property.

(6) Tax on private menials and domestic servants.

(7) Tax on private markets.

(8) Octroi on animals or goods or both, brought within municipal limits for consumption or use.

(9) Tolls on vehicles and animals entering municipal limits, and tolls on ferries, bridges and metalled roads.

(10) Fees on the registration of cattle sold within municipal limits and of carts and other vehicles.

The taxes provided for in the Acts vary, however, in the different provinces, and not all these taxes are actually levied in any one province. Any tax other than those specified in the Acts, which is proposed to be levied, ordinarily requires and should continue to require the sanction of the Governor-General in Council.

12. The most important taxes now in force are octroi duties, levied principally in Bombay, the United Provinces, the Punjab, the Central Provinces and the North-West

Frontier Province and the tax on houses and lands which holds the chief place in the other provinces as well as in Bombay city.

13. The octroi-system in the existing circumstances of the country has certain obvious advantages. As a tax octroi is productive and grows with the prosperity of the town. Its imposition is sanctioned by immemorial usage, and the people are habituated to the system by long custom. The tax is usually paid in small amounts and the effect of the payment is not generally felt as a burden. On the other hand, there is no doubt that it provides constant opportunities for fraud, delay and oppression owing to the necessity of entrusting large discretionary powers to a subordinate agency, that it is expensive to collect and wasteful and, finally, that in many places it constitutes a serious burden on trade in general, and in particular on through trade, notwithstanding the provision made for refunds. On the recommendation of a strong representative committee and the Local Government, the Government of India have sanctioned an experiment in the United Provinces, which involves (a) the substitution of direct taxation for octroi in the smaller towns, and (b) the application to a large number of other towns in which conditions are suitable for the system of a terminal tax, or light transit dues on imports or exports, subject to no refunds. The Government of the United Provinces considers that some of the main benefits of such a system, and in particular a reduction of the high cost of collection, can only be secured if the tax is collected through the agency of the railway companies, who should be adequately remunerated for their services. The Government of India are prepared to facilitate negotiations to this end. The Government of Bombay have assented to the tentative replacement of octroi by a terminal tax in a few municipalities selected from those desirous of making the experiment. The question is under consideration or experiment in other provinces also. The Government of India

Octroi and the terminal tax.

while adhering to the principle that municipal taxation should not operate, so far as can be avoided, as a transit duty on through trade, are prepared to concede that a light terminal tax with no refunds may in practice prove less burdensome to through trade than the octroi system as hitherto administered, provided that the following conditions are observed—*viz.*, (1) that the terminal tax, wherever imposed, should be substantially lower in its rates than the octroi which it replaces, (2) that it should be limited to places where there are special grounds for applying it which must be adequately demonstrated, (3) that it should be regarded as facilitating the transition to a system in which direct taxation will form an increasingly important factor, and not as an elastic means of progressively increasing the resources of municipalities apart from normal development due to increase of traffic and (4) that it should not be adjusted with the primary object of compensating municipalities for the loss of octroi.

14. The house and land tax is the chief source of municipal income in Madras, Bengal, House and land tax. Burma, Bihar and Orissa, and Assam and it has been imposed with some success in portions of Northern India. This tax, however, is difficult of assessment in many places, where it is the custom to own rather than to rent dwelling houses, because in such cases the house affords no indication of the financial status of the owner. Many aristocratic but impoverished families live in large buildings which are merely relics of vanished prosperity, while the rich trader often remains content with the humble dwelling in which he was born. There is, however, a growing tendency on the part of the professional and trading classes to spend a larger proportion of their incomes on securing sanitary accommodation, so that it is reasonable to anticipate that the house tax revenue will gradually expand, and will generally be contributed by those best able to pay. The technical and administrative difficulties of assessment have in places been overcome by entrusting the preparation and periodic revision of registers to outside agency.

15. A tax on professions and trades yields a considerable revenue in certain provinces, *e.g.*,
 Tax on professions and trades. £ 17,239 (Rs. 2,58,591) in Madras,
 £4,697 (Rs. 70,465) in Bengal, £14,106
 (Rs. 2,11,599) in the United Provinces and £4,869 (Rs. 73,036)
 in the Central Provinces. It has also been imposed in some
 towns in Northern India. But neither it nor the tax on
 circumstances and property is likely to yield a large revenue
 and there is always danger lest local taxation of this kind
 encroach on the field of Imperial taxation.

16. In Benares there is a form of terminal tax which is
 Tax on pilgrims. imposed, with certain exceptions, on
 passengers coming to or leaving that
 station by rail. There is a radius of exemption beyond which
 the tax is levied and it is collected by the railway companies as
 a surcharge on railway fares. A similar tax is also in force in
 Calcutta which is levied by the Calcutta Improvement Trust
 and is collected from passengers entering or leaving that city
 by rail or steamer. In Hardwar, Ajudhia and Thanesar,
 there is a tax on pilgrims and other persons who enter the
 limits of those municipalities. The tax at Hardwar is levied
 on railway passengers throughout the year, while that at the
 other two municipalities is imposed only on the occasion of
 certain special fairs. In Bombay a pilgrim tax may be levied
 under section 59 (b) (x) of the District Municipal Act, III of
 1901.

17. The Commission were of opinion that municipalities
 Powers of taxation. should have full liberty to impose or alter
 taxation within the limits laid down by
 the municipal laws but that the sanction of an outside authority
 to any increase in taxation should be required where the law
 did not prescribe a maximum rate. Subject to the general
 control of the Government of India over the principles to be
 followed, the sanction of the Local Government is at present
 necessary to every proposal for the imposition of taxation. A
 maximum rate is prescribed in the Madras, Bengal, and Burma

Acts, and in the Punjab, United Provinces and Central Provinces, so far as regards the tax on buildings and lands; but none is laid down in Bombay. The recommendations of the Commission do not command general assent. It is pointed out, for instance, that a municipality might reduce its taxation without due consideration to the needs of the administration and the security of loans. The Government of India, while recognizing the force of such objections, are, on the whole, in general sympathy with the Commission's recommendations. They think, however, that power to vary any tax might be reserved by such Local Governments as are unable to accept in full the recommendations of the Commission and that in the case of indebted municipalities the previous sanction of higher authority should be required to any alteration of taxation.

18. Municipal finance has shown a marked expanse during the last decade. The total income of 701 municipalities in 1912-1913 was £3,282,845 (Rs. 4,92,42,675) as compared with £1,844,081 (Rs. 2,76,61,215) for 753 municipalities in 1902-1903. Contributions from Government have materially assisted this expansion. Since 1911, the Government of India have made grants amounting to £3,076,466 (Rs. 4,61,47,000), of which £368,200 (Rs. 55,23,000) are recurring, for urban sanitation. Municipalities have also received their share—the exact figure is not easily ascertainable—of the large educational grants made by the Government of India since 1911, amounting to about £3,987,800 (Rs. 5,98,17,000), of which £826,666 (Rs. 1,24,00,000) are recurring. Municipal Boards have been relieved of all charges for the maintenance of police within municipal limits. In almost every province, the recommendation that municipalities should be relieved from financial responsibility for famine relief and should receive assistance from Government in the case of severe epidemics, has been already given effect to, or the principle has been accepted.

There is a growing demand on every side for improvements and it is not possible for all municipalities to finance large

schemes of water-supply and drainage without substantial aid. Such aid has been freely given by the Imperial and Local Governments. The power of the Government to make grants is, however, limited and financial assistance of this nature cannot be expected unless the rate-payers are prepared to bear a reasonable proportion of the burden. Where, however, further taxation is not possible, the Government of India trust that municipalities will bear in mind the possibility of supplementing taxation by development of municipal property, so as to ensure the best possible returns and by maintaining the principle that special services such as the supply of water, electric lighting, etc., should, as far as possible, pay for themselves.

The Government of India have also accepted a further recommendation of the Commission, namely, that assistance may legitimately be given by Government to poorer municipalities which, without it, would be unable to carry on the normal standard of administration required from them. In such cases, the Government of India agree with the Commission that assistance can best be given, when it is given, by a general recurring grant-in-aid, which should be at the discretion of the Local Government and met from its own resources.

19. The Commission proposed that if a municipal or rural board has to pay for a service it should control it, and that where it is expedient that the control should be largely in the hands of Government, the service should be a provincial one. The Government of India while not prepared to accept the proposal in full have approved it in a somewhat modified form. They consider that charges should be remitted in cases where a local body contributes to Government for services inherent in the duty of supervision and control by Government officers, or for services which cannot expediently be performed except by Government agency. For example, Government may properly cease to charge for clerical

Payment and control
of services.

establishments in the offices of supervision and control, or for the collection of district cesses which it is clearly expedient to realise along with the Government revenue. On this principle they have made assignments which will relieve both municipalities and rural boards of payments amounting to £40,000 (Rs. 6,00,000) a year approximately.

20. It was suggested by the Commission that municipalities should be empowered to levy a special rate for the construction or promotion of trainways. Local Governments generally are doubtful as to the value of the proposal. The Government of India will, however, be prepared to consider any practical proposal to this end which they may receive.

21. Commenting on the minute control exercised in some provinces over municipal finance, the Commission recommended that municipalities should have a free hand with regard to their budgets; the only check required should, they thought, be the maintenance of a minimum standing balance to be prescribed by the Local Government. They acknowledged that relaxed control might lead to mistakes and mismanagement, but they were of opinion that municipal bodies could attain adequate financial responsibility only by the exercise of such powers and by having to bear the consequences of their errors. Further checks would be provided by the control which local Governments would exercise over loans, and by the power which should be reserved to compel a municipality to discharge its duties in case of default. The system proposed is stated to be in force in Bombay Presidency where, however, no minimum balance is required by law. The Government of the United Provinces accepts the recommendations subject to the condition that Commissioners should pass and that Government should see the budgets of indebted municipalities. The Punjab Government also agrees subject to the proviso that the budget of an indebted municipality should be forwarded to the Government for information. The Govern-

ment of Bengal are prepared to introduce the change experimentally in certain selected municipalities. They intend also to issue general instructions to Commissioners in this province to abstain from interference in details and to restrict their supervision to securing (1) a minimum closing balance, (2) provision for the service of loans, (3) the observance of the provisions of the Act or statutory rules and of any standing orders of Government. Other Governments concede certain relaxations of existing rules. The Government of India accept these opinions for the present, but they nevertheless regard the recommendations of the Commission as expressing a policy to be steadily kept in view and gradually realised.

22. The Commission proposed that the existing restrictions on municipalities, which require outside sanction for works estimated to cost more than a certain amount, should be removed but that Government should scrutinize and sanction estimates of projects to be carried out from loan funds. The majority of the local Governments are prepared to relax the existing rules in the direction of giving more freedom to municipal boards. The Government of India are in favour of extended freedom subject, where necessary, to proper precautions against extravagant and ill-considered projects. They are content, however, to leave the precise extent of relaxation to be determined by Local Governments. One important factor in this connection will be the quality of the professional agency available in the various boards. In their Resolution No. 1019-A., dated the 10th November 1914, promulgating rules relating to the grant of loans to local bodies under the Local Authorities Loans Act, 1914, the Government of India have emphasised the necessity for a proper scrutiny of projects financed with borrowed money and they trust that the rules in question will be carefully observed.

23. It was recommended by the Commission that the degree of outside control over municipal establishments should be relaxed, that the appointment of municipal secretaries or other chief

executive officers, of engineers and health officers, where these exist, should require the sanction of the local Government in the case of cities, and of the Commissioner elsewhere, and that the same sanction should be required for any alteration in the emoluments of these posts, and for the appointment and dismissal of the occupants. As regards other appointments, they proposed that the local Governments should lay down for municipal boards general rules in respect to such matters as leave, acting and travelling allowances, pensions or provident funds and maximum salaries, and that their sanction should be required for any deviation therefrom. Almost all local Governments have expressed their willingness to relax outside control over the appointment of the staff employed by local bodies. In Bombay, the system is generally that recommended by the Commission. In some other provinces, the existing rules give a free hand to municipalities, subject to outside control in the case of certain appointments. The Government of India, while considering that Government control over other posts might reasonably be relaxed, accept the view that outside sanction should be required to the appointment or dismissal of secretaries, engineers and health officers, and they have already advised Local Governments to take powers where these do not exist, to require a municipality to appoint a health officer and to veto the appointment of an unfit person. Such powers already exist in the Bombay Presidency and have recently been taken by legislation in Bengal. The Imperial and Provincial Governments have given liberal grants to selected municipalities in order to establish a trained service of health officers and sanitary inspectors, the conditions of these grants being, as in England, such as will ensure the appointment of qualified men and reasonable security of tenure.

24. The Commission thought that the Collector should retain certain powers, given under the existing Acts, *e.g.*, the power to suspend in certain cases the operation of municipal resolutions and that the Commissioner should be able to require a municipi-

Special outside control.

pality which has neglected a particular service to take such action as he may consider necessary. The Local Governments generally and the Government of India are of opinion that special powers of outside control are necessary and should continue.

25. The question of extending the powers of selected municipalities to enable them to relieve the pressure of population in congested areas, and to undertake schemes of orderly town-planning in order to provide for future needs, has been dealt with by the Government of India in paragraphs 43 and 44 of their Sanitary Resolution Nos. 888-908, dated the 23rd May 1914. A Town Planning Bill, combining many original features with others derived from the latest English and Continental legislation, has now been passed into law in the Bombay Presidency, and the Government of India will watch with deep interest the results of this experiment, which will, they trust, pioneer a fruitful expansion of municipal activities in India.

Rural Boards (district and sub-district)

26. The Commission desired that sub-district boards should be universally established and that they should be the principal agencies of rural boards' administration. They noted that there was a considerable body of evidence that the sub-district boards existing in Bombay, Bengal, Punjab, Bihar and Orissa and the Central Provinces had not been efficient or successful bodies, and this they attributed largely to the circumscription of their powers and resource. They thought that these boards should have adequate funds and a large measure of independence, and that their jurisdiction should be so limited in area as to ensure local knowledge and interest on the part of the members, and be at the same time a unit well known to the people. For this purpose they suggested the taluka or tahsil as a suitable unit. The system recommended by the Commission is in force in Madras, where, however, the

territorial jurisdiction is coterminous with the revenue division. In Bombay, the taluka board is universal and is the principal agency in rural board administration. In Bengal and in Bihar and Orissa, the sub-district boards are merely the agents of the district boards and have restricted powers. The Local Governments concerned deprecate such a reconstitution as would involve sapping the vitality of district boards while in entire agreement with the Commission that sufficient use has not hitherto been made of these bodies. In the Central Provinces where also sub-district boards with limited power exist, a scheme has been introduced for enlarging their scope by entrusting them with the management of minor public works, sanitation, water-supply, etc., and placing an adequate share of the district council funds at their disposal for these purposes. In Assam, the rural boards have jurisdiction over sub-divisional areas, and perform the duties assigned elsewhere to district boards. The Governments of the United Provinces and the Punjab and the Chief Commissioner of the North-West Frontier Province consider the scheme unsuitable in view of local conditions. Districts in Northern India are comparatively small and form an easily controlled unit, communications are good, and moreover under existing conditions in the provinces concerned it would be more difficult to secure competent boards in tahsils than in districts. The Lieutenant-Governor of the United Provinces considers, moreover, that there is every prospect of a steady advance in the reality and utility of district boards by a continuous and orderly development of the existing system of delegation to tahsil or sub-divisional committees. The Punjab Government favours the formation of sub-committees within a district board on a local basis. The Government of India accept the views of the several Local Governments in regard to their own provinces.

27. District and sub-district boards, in the opinion of the Commission, should contain a large preponderance of elected members, together with a nominated element sufficient to secure the due representation of minorities and of official experience.
- Elective majority.

In the United Provinces, the number of nominated members on a district board cannot exceed one-third of the elected members, while in the Central Provinces the number of such members cannot exceed one-third of the total number. The Government of Madras are prepared to raise the proportion of elected members to two-thirds and one-half of the maximum strength on district and sub-district boards respectively. In Bombay, the Governor in Council regards it as inadvisable, in present conditions, to provide for an elected majority on the boards. There is already a substantial majority of elected members both in district and sub-district boards in Bengal, and in Bihar and Orissa. In the Punjab, the elective system has been applied to many districts and the Local Government has expressed its readiness to extend it. The Chief Commissioner of Assam has adopted the principle of granting an elective majority. In the North-West Frontier Province, the change is not yet practicable owing to factional and tribal feeling. It will be seen that Local Governments in general are in sympathy with the Commission's proposal.

28. The Commission were of opinion that an official
Chairmen. should remain, as he usually is at present, chairman of every district and sub-

district board. They considered that the removal of the district and sub-divisional officer from the presidentship of rural boards would have the effect of dissociating them from the general interests of the district in such matters as roads, education, sanitation, etc., and would divorce them from healthy contact with instructed non-official opinion. They differentiated the circumstances of rural boards from those of municipalities, in that the latter are less connected with general district administration, that they have reached a higher level of political education and that the jurisdictional area is much smaller and more compact. All local Governments have accepted this view with which the Government of India are in agreement, though they will have no objection to non-official chairmen being retained where such exist, or appointed where a Local Government or Administration desires to make the experiment.

29 The funds of district boards are mainly derived from a cess levied upon agricultural land over and above the land revenue, with which it is collected, and not usually exceeding one anna in the rupee ($6\frac{1}{4}$ per cent.) on the annual rent value. Since 1905 this income has been specially supplemented by a Government contribution amounting to 25 per cent. of the then existing income. Besides this, special grants are frequently made to district boards by local Governments. The total number of district and sub-district boards in 1912-1913 was 199 and 536, respectively, with an aggregate income of £3,787,219 (Rs. 5,68,08,292). In the same year they received specially large grants from the sums allotted by the Imperial Government for education and sanitation. Prior to 1913 the district boards of several provinces did not receive the whole of the land cess. For example, this cess in Bengal and Bihar and Orissa was divided into two parts, *viz.*, the road cess and the public works cess. The district boards only enjoyed the benefits of the road cess, while the public works cess belonged of right to the local Government, which returned, however, a portion in the shape of discretionary grants. In other provinces, *e. g.*, the United Provinces, the Punjab and the North-West Frontier Province, considerable deductions were made by the local Governments concerned from the cess for various purposes. In 1913 the Imperial Government made assignments to the local Governments concerned to enable them to hand over the entire net proceeds of the cess to the boards. The relief thus given amounted to £548,866 (Rs. 82,33,000) a year and the provinces which benefited were Bengal, the United Provinces, Bihar and Orissa, and to a smaller extent the Punjab and the North-West Frontier Province. The income of district boards in Bengal, the United Provinces and Bihar and Orissa has mainly by this measure been increased by 44, 43, and 35 per cent., respectively, in the year 1913-1914. This notable expansion will enable them in future to undertake or develop many beneficent activities from which they have hitherto been debarred by lack of financial means.

Expenditure.

Province.	Education.	Medical.	Civil works	Refunds and draw-backs.	Administration (general establishments of local funds.)	Cattle pound charges.	Miscellaneous	Famine relief.	Contributions.	Other items.
Madras	10.3	10.0	50.6	0.1	2.9	..	2.6	..	8.4	15.1
Bombay	38.6	4.5	46.6	..	2.3	0.1	1.3	0.1	2.9	3.6
Bengal	25.3	5.9	55.7	..	3.3	0.4	0.3	..	0.5	10.6
United Provinces..	31.7	12.5	45.2	..	2.7	2.0	0.1	..	2.2	3.6
Punjab	23.7	7.8	41.4	..	2.9	1.1	1.0	..	13.6	8.5
Bihar and Orissa ..	17.1	6.4	56.3	..	2.8	0.3	0.3	..	1.4	15.4
Central Provinces..	30.0	6.3	33.0	..	3.8	6.3	0.3	..	1.0	19.3
Berar	31.7	8.4	37.8	..	3.8	3.2	0.2	..	4.6	10.3
Assam	26.4	8.7	57.8	0.2	1.5	..	0.9	..	1.6	2.9
North-West Frontier Province ..	30.0	12.5	34.5	..	3.8	0.1	0.3	..	7.5	11.3
Coorg	21.8	11.6	51.3	..	2.3	1.8	1.4	..	1.2	8.6
Delhi	24.4	9.2	51.0	..	3.5	1.3	0.9	..	3.3	6.4

30. It was the opinion of the Commission that district boards should not be empowered to raise the land cess beyond one anna in the rupee on the rent value, as this would be an unpopular measure. Under present conditions any proposal to raise the limit imposed by the existing law, would require the previous sanction of the Government of India. Such proposals would need the most careful consideration on the merits, and the Government of India do not consider it necessary for the present to make any pronouncement on the subject.

31. The Commission proposed to allow district boards to levy a special extra land cess of 3 pies in the rupee on the annual rent value of land for the construction of light railways or tramways conditional on the approval of the tax by not less than three-fourths of the members of the board. This resolution would be subject to confirmation after a period of six months by an equal majority at a like meeting and to the sanction of the local Government. The Government of India, after consulting local Governments, have with the sanction of the Secretary of State empowered local Governments to undertake legislation, if they so desire, in accordance with the Commission's proposals. The scheme is to be commended from many points of view. It has an educative value by associating local self-government with responsibility for taxation for local objects and it opens up great possibilities of economic development. The actual imposition of the tax will in many instances probably not be necessary; the power to impose it, if necessary, will be sufficient for purposes of guarantee. In a few districts in Bengal the ordinary resources of district boards have proved sufficient for the construction of railways within the limits of the district. The eminently satisfactory results which have attended the construction of district board lines in the Presidency of Madras encourage the Government of India to hope that the financial results of carefully selected schemes will in the course of a few years

materially strengthen the financial resources of district boards which are in a position to undertake the construction or guarantee of these lines. Legislation to carry out the proposal has already been undertaken in Assam and is under consideration in the Punjab. The Government of India trust that other Local Governments will take steps to confer the necessary powers on the local authorities and that selected boards throughout the country will experiment on the lines suggested.

32. There are two general methods by which district boards, which possess the necessary resources, may secure the construction of a railway within the limits of the district. A district board may wait until the surplus funds which it has accumulated from the levy of a special cess or otherwise are adequate to justify it in undertaking construction at its own cost, or it may decide to allow to a company floated for the special purpose of the construction of the proposed railway a firm guarantee on the capital paid up. In such cases in return for the guarantee, the district board will become entitled to a share of the surplus profits over a certain fixed percentage accruing from the working of the feeder railway. If the former method be adopted, it will usually be found convenient and economical to entrust the construction and working of the railway owned by the district board to the main line—whether worked by the State or by a company—with which the district board railway connects. In the latter case, the branch line Company receiving the district board's guarantee may itself undertake construction and working, or may arrange for construction and working through the agency of the main line. The Government of India are of opinion that when a light railway using steam locomotives is projected outside urban limits it will ordinarily be preferable to deal with the project as a railway under the Railways Act rather than as a tramway under the Tramways Act. In any event the sanction of the Railway Department is necessary in order

Methods of Railway
construction.

to ensure that the project shall not conflict with others which that Department may have under their consideration, and the Railway Department will at all times, when so desired, endeavour to arrange suitable terms for construction and working on behalf of the district board, or on behalf of a company which has received a district board guarantee. As a result of a recent reference from the Government of Madras, the Government of India have decided that when a district board has accumulated a sum which, though substantial, is insufficient to meet the entire cost of a railway project which a district board desires to carry out, there is no objection to the raising of a debenture loan on the security of the railway to be constructed and the potential resources which a district board possesses through the power to continue the levy of a railway cess. For the redemption of such debentures a special sinking fund need not be accumulated. By this expedient a district board may become the owner of a district railway at a much earlier date than would formerly have been possible. A large field is thus offered for district board enterprise. This recent decision will, it is hoped, be of substantial assistance in accelerating the construction of local feeder railways outside the Imperial programme.

33. A further recommendation was that rural boards should be given full power to pass their budgets subject only to the maintenance of a prescribed minimum balance. The procedure recommended by the Commission is stated to be already in force in the Bombay Presidency. Other local Governments generally are not prepared to accede to this complete removal of restrictions, although some of them propose some relaxation in the existing rules. The Government of India consider that the present restrictions on the powers of the boards with regard generally to budget expenditure should be gradually relaxed with due regard to local conditions and requirements. The fact that an official is almost invariably

Budgets and financial
control.

president of a rural board and that powers of inspection and control by certain officers of Government are provided under the Acts relating to rural boards should ordinarily, in their opinion, be sufficient safeguards against gross inefficiency or mismanagement.

34. The Commission also proposed that the existing
Estimates for public works. stringent restrictions on rural boards with regard to estimates for public works should be removed. At present rural boards have to obtain outside sanction in respect to roads and other public works, the estimates of which involve any considerable amount, the limits varying for different provinces. In the opinion of the Government of India, which has the general support of local Governments, the grant to rural boards of full powers in the allotment of funds and the passing of estimates cannot, for the present at least, be conceded, but the extent of the necessary financial control might depend in the case of rural boards on the competence of the staff employed, and, where this varies, it would not be desirable to lay down hard and fast rules for the whole province. In such cases district boards might be placed in different classes according to the staff employed. The Government of India accept the view of the Commission that in districts where there are sufficient works to justify the special appointment of a trained engineer, a district board which desires to entertain such an officer and can afford to pay him an adequate salary should be permitted to do so.

35. The Government of India have come to the same
Establishments. conclusions in the case of establishments of rural boards as in the case of municipalities (paragraph 23 *supra*). They have recently, in their Sanitary Resolution, Nos. 888-908, dated the 23rd May 1914, expressed the opinion that the appointment of well-qualified and wholtime district sanitary officers to control and organise all sanitary arrangements and experiments in the district is one of the urgent needs of the present time.

36. Special powers of control over rural boards are vested in outside authorities under the Special outside control. existing Acts, and the Commission recommended that these should continue. The Local Governments in general as well as the Government of India accept this view.

Village Organisation—Panchayats or other Committees.

37. The Commission recommended the constitution and development of village panchayats Recommendations of the Commission. possessed with certain administrative powers, with jurisdiction in petty civil and criminal cases, and financed by a portion of the land cess, special grants, receipts from village cattle pounds and markets, and small fees on civil suits. This proposal, favourably commended by the Government of India, who expressed their readiness to acquiesce in some form of permissive taxation, if need be, has in general been sympathetically received. The practical difficulties are, however, felt to be very great in many parts of India. The Government of Burma and the Chief Commissioner of the Central Provinces deprecate the introduction of a system which, in their judgment, is alien to the customs of the people and will not command public confidence. Other Governments are willing to experiment, but on different lines. The Punjab Government has already established panchayats for civil cases only and of a voluntary character. Sir Leslie Porter, when officiating as Lieutenant-Governor of the United Provinces, expressed his willingness to entrust selected panchayats with criminal as well as civil jurisdiction. The Madras Government are desirous of experimenting in the establishment of panchayats but consider that action should be confined for the present to the encouragement of voluntary self-contained organisms independent of statutory sanction and consisting of village elders conferring together for common village purposes. So far as judicial functions are concerned they are content to rely on the provisions of the Madras Village Panchayats Regulation, 1816, and the Madras

Village Courts Act, 1888, which authorise the assembling of panchayats and the convening of village bench courts for the settlement of particular civil suits on the application of the parties and to encourage the operation of these enactments wherever practicable. The Governments of Bengal and of Bihar and Orissa are of opinion that their existing laws sufficiently provide for the establishment of panchayats with administrative duties, while powers to dispose of criminal cases could be given under the existing Acts dealing with these matters. The Chief Commissioner of Assam has expressed his readiness to develop village government and the Local Self-Government Bill which has recently passed the Legislative Council of that province permits the constitution of village authorities, the grant of funds by local boards and from other sources, and the delegation of minor powers of local control. The whole question has now been raised again in the discussions contained in the report of the Bengal District Administration Committee, 1913-1914.

38. The Commission recognised that any policy of establishing panchayats would be the work of many years, would require great care and discretion, and much patience and judicious discrimination between the circumstances of different villages. The Government of India desire that, where any practical scheme can be worked out in co-operation with the people concerned, full experiment should be made on lines approved by the Local Government or Administration concerned. Throughout the greater part of India the word 'panchayat' is familiar. The lower castes commonly have voluntarily constituted panchayats, to whom they allow quasi-judicial authority in social matters. The more artificial administrative committees such as chaukidari panchayats, local fund unions, and village sanitation and education committees, and, in places even village panchayats, already exist. The spread of co-operative societies and the distribution of Government advances in times of famine and scarcity on joint security are educative

influences. Village tribunals for the disposal of petty civil suits have got beyond the experimental stage in some places and are in the experimental stage in others. There is, therefore, some material with which to build. The Government of India agree, however, with the view prominently brought forward by the Bengal District Administration Committee that much will depend on the local knowledge and personality of the officers who may be selected to introduce any scheme.

39. With this general commendation,, the Government of India are content to leave the matter in the hands of Local Governments and Administrations. They are disposed to consider that the following general principles indicate the lines on which advance is most likely to be successful:—

(1) The experiments should be made in selected villages or areas larger than a village, where the people in general agree.

(2) Legislation, where necessary, should be permissive and general. The powers and duties of panchayats, whether administrative or judicial, need not and, indeed, should not be identical in every village.

(3) In areas where it is considered desirable to confer judicial as well as administrative functions upon panchayats the same body should exercise both functions.

(4) Existing village administrative committees, such as village sanitation and education committees, should be merged in the village panchayats where these are established.

(5) The jurisdiction of panchayats in judicial cases should ordinarily be permissive, but in order to provide inducement to litigants reasonable facilities might be allowed to persons wishing to have their cases decided by panchayats. For instance, court fees, if levied, should be small, technicalities in procedure should be avoided and possibly a speedier execution of decrees permitted.

(6) Powers of permissive taxation may be conferred on panchayats, where desired, subject to the control of the local Government or Administration, but the development of the panchayat system should not be prejudiced by an excessive association with taxation.

(7) The relations of panchayats on the administrative side with other administrative bodies should be clearly defined. If they are financed by district or sub-district boards, there can be no objection to some supervision by such boards.

Presidency Corporations and Rangoon.

40. The Commission recommended that all the presidency corporations should be invested with the powers possessed by the Corporation of Bombay, and that the system of administration in force in that city, *viz.*, that of a nominated official Commissioner in combination with an elected chairman, should be extended to the other towns. They also considered that the same privileges should be conferred on the Rangoon municipality in view of its population, the large future which lies before it and the strength of its commercial community.

41. The presidency municipalities are regulated by special Acts, and their resources and powers are far greater than those of any district municipality. In Calcutta and Madras, the municipal chairman is appointed by Government. In Bombay, he is elected, but the executive administration is vested in a Commissioner nominated by Government. He is assisted by a Deputy Commissioner appointed by the Corporation subject to the confirmation of Government. The Commissioner possesses wide executive powers; in some matters he must obtain the sanction of the standing committee (a statutory body, one-third of whose members are nominated by Government); in others again of the corporation. The Corporation enjoys a very full discretion in the work of municipal administration; it passes its own budget, and may impose taxation within the limits of the law; and the sanction

of Government is necessary only to the appointments of health officer and engineer.

The Corporation of Calcutta possesses similarly wide powers. The sanction of Government is, however, required to the execution of works costing one lakh of rupees or more and to the salary of any employee drawing more than Rs. 1,000 a month, as well as to the appointments of health officer and engineer.

In Madras, the Government possess numerous powers which are not reserved to the Governments of Bengal and Bombay.

42. As regards the main proposal of the Commission, the Government of Bengal were in 1909 disposed to agree with the preference expressed for the constitution of the Bombay Municipality in respect of the offices of Municipal Commissioner and chairman, but stated that the point would be considered hereafter, should the amendment of the Calcutta Municipal Act be undertaken. The Government of Madras agree with the corporation as to the advisability of introducing the Bombay system, and they have no objection to the general emancipation of the corporation from Government control, provided that the Municipal Commissioner is placed in a position substantially as strong as he occupies in Bombay.

43. The Government of India have accepted in the main the recommendations of the local Governments which will go far towards carrying out the proposals of the Commission. They have expressed to the Government of Madras the opinion that a free hand might be left to the corporation to impose, without the sanction of Government, any tax specifically sanctioned by the Act with regard to which maximum rates have been laid down therein. They consider that in order to provide security of tenure, the health officer, revenue officer, and engineer should not be removable without the sanction of Government. In the case both of Calcutta and Madras, the limit of cost of works which may be undertaken without the sanction of Government

will be raised to Rs. 2½ lakhs, and, with regard to Calcutta, the Government of Bengal have agreed to remove the restriction requiring the sanction of Government to salaries carrying more than Rs. 1,000 a month. The appointments of health officer and engineer will continue to require this sanction.

44. With regard to Rangoon, the Government of Burma
Rangoon. is not prepared to make the concessions recommended. The circumstances of Calcutta, Madras and Rangoon are in many respects widely different, and the Government of India defer, at any rate at present, to the views of the local Government on this point. But they observe, as a general proposition, that in cities where there is a responsible public press and representation in the Provincial councils, the case for entrusting large powers and extended freedom to the municipal bodies appears to be specially strong.

45. The suggestion that Government control over
Local Government Board. rural boards and municipalities should be exercised in each Province by a Local Government Board, which should contain a proportion of non-official members, was not accepted by the Commission. They considered that, since their proposals would greatly reduce the outside control exercised over the proceedings of municipal and rural boards and would provide for the delegation in large measure of such powers of guidance as are necessary to Commissioners and other local officers, no benefit would be derived from the creation of a special controlling board of this nature. The Government of India also are not prepared to support the proposal, which is not only unnecessary in the opinion of the Local Governments consulted but is undesirable as tending to perpetuate the very centralisation in local affairs, which it is the object of Government to diminish.

46. In conclusion, the Governor-General in Council
Conclusion. hopes that this declaration of policy may lead to steady and sound progress, without hampering Local Governments and Administrations

or unduly fettering local self-government. It is designed to mark a definite advance in devolution and political education. His Excellency in Council trusts that it will be interpreted in the spirit in which it is framed, a spirit of prudent boldness, calculating risks but not afraid to take them in the cause of progress.

Local and Municipal Administration during 1913-14.

[Assam.]

THE Local Boards are constituted under executive authority, the necessary legislation to give them a statutory existence having only just been passed. The total amount of revenue that they had to handle was Rs. 38,19,544, but they expended only Rs. 30,11,186 leaving a balance of Rs. 8,08,358. This short expenditure is explained as due to the insufficiency of the Public Works Staff and the unusually large special grants made to them by the Government. There is evidence of progress everywhere, and, what is more, a determination to advance, which is very striking. We make no apology for quoting in full the remarks of the Chief Commissioner on the success of the experiments made in the direction of encouraging village organizations to deal with petty sanitary and other improvements :

“ The experiment inaugurated in 1912 and 1913, of interesting village people in minor sanitary improvements by allotting small sums of money to selected villages, was continued on a larger scale during the year under review. A grant of Rs. 6,000 was made from the provincial revenue to Local Boards in each Valley. In the Surma Valley, all the Boards received a share of the grant and distributed the sums among selected villages for such local improvements as the villagers considered most needed. The Assam Valley grant was divided among five Boards selected by the Commissioner of the Division, namely, Dhubri, Gauhati, Nowgong, Sibsagar, and Jorhat. The sum received by each Board was distributed among number of villages in allotments of Rs. 50. The experiment

is reported to have been eminently successful in the Surma Valley and fairly successful in Nowgong, Sibsagar and Jorhat, the sums allotted having been, with but few exceptions, usefully spent in improving village paths and bazaars, cutting jungle, clearing old tanks, opening drains, and similar useful work. In many cases, the grants were supplemented by local subscriptions and in others by free or cheap labour. On the whole, the experiment, which was intended to be preliminary to the organization of village authorities, has met with a considerable measure of success, and has shown that the villagers can be induced to take an interest in the improvement of their surroundings. As a result of experience which has been gained during the last two years, the organization of village authorities will now be taken up experimentally in a few circles in each division, and the special grants from provincial funds for village improvement will in future be confined to villages included in those circles. Two such circles will be formed immediately in Kamrup and it is hoped that it will be possible to start at least one in Sylhet in the course of the cold weather. Preliminary arrangements are being made for the formation of others in Sylhet and Sibsagar. The chief difficulty at present lies in finding suitable officers to hold charge of the circles. The number of trained Sub-Deputy Collectors is hardly sufficient for general work, and the additional appointments which have been made in view of the requirements of the village organization scheme, do not immediately increase the number of experienced officers available."

We should be glad to know in fuller detail how the work of the village bodies was supervised and whether their accounts were audited by the usual audit staff.

[Bengal.]

Twenty-five District Boards aided by seventy-two Local Boards controlled the management of local civic affairs in Bengal during 1913-14. The total revenues administered by these boards rose from 71·70 lakhs in 1912-13 to 107·30 lakhs during the year under review; while the expenditure increased from 65·46 to 85·82 lakhs. The large increase in the revenues was, it is observed, due to the surrender to District Boards of the public works cess amounting to more

than 29 lakhs. The closing balances of these boards were heavy, notwithstanding the rise in the expenditure. The Local Government had therefore to impress upon the attention of all District and Local Boards the importance of working up to their full incomes by drawing up and carrying through practical schemes of improvements.

It is a matter for regret that several elections held during the year failed owing to an insufficient attendance of voters ; the vacant seats had therefore to be filled up by nomination. From enquiries, it was made out that the voters' lists were incomplete in many districts and that the existing rules were hardly suited to present conditions. The whole system of Local Board Elections is now under the examination of the Local Government.

The special feature of the administration is that the charges on account of education amounted to more than 27 per cent. of the District Boards' expenditure. The construction of a large number of primary schools and their equipment from Imperial grants have contributed to the heavy expenditure. The progress made under female and Muhammadan education has elicited the warm appreciation of the Local Government. Mention has also been made of the satisfactory work done by the weaving schools, and it is reported that the flyshuttle pattern loom is now gaining popularity. The Sericultural Nursery at Sabong in Midnapore is stated to have rendered a good account of itself and it must be a matter for some satisfaction that local producers of silk are beginning to realise the advantages of scientific training.

Sanitation received some prominent attention. Jungle clearing as a preventive of malaria was largely resorted to, but the experts seem to question seriously the efficacy of this measure and it is apprehended that no lasting results would be obtained by such measures unless they are conducted on scientific principles. The supply of good water has been pressed as the most urgent need at the present times.

Some activity is also noticed in regard to railways. The construction of one railway has been taken up by a private company without a guarantee from the District Boards concerned.

Municipal Legislation.

Sanitation in the Mufassal.

[BY A MUNICIPAL SECRETARY.]

THE Government have been very liberally sanctioning grants to improve the sanitation of towns and villages by opening conservancy lanes, by opening up congested areas and by acquiring sites for town extension. They have also been spending large sums of money in deputing special officers to investigate into the causes that lead to certain diseases such as malaria, tuberculosis, etc., and to suggest measures for their suppression, if not, for their complete eradication. The Government have thus been doing their best to improve the sanitary condition of the towns and villages, while the local bodies,—the municipalities and the local boards—have not been able to free the towns and villages from the permanent nature of their insanitation. This is perhaps not surprising since the legislation on the subject is not as effective as it should be. The law on the subject does not make it incumbent on the local bodies to effectually remove everything insanitary and offensive from within a dwelling house or in its neighbourhood. It prescribes a circuitous method of giving notice to the owner or occupier to remove the offensive matter, and in default of his obeying the notice, of prosecuting him. If the prosecution has no effect, the same process has to be repeated. But all this means a considerable time during which seeds sown for several kinds of diseases by the imprudence of the owner or occupier are allowed to fructify and bear full fruit. With the advanced scientific knowledge that has been a boon to the present generation, it is rather deplorable that a tacit consent to such insanitary developments should be accorded by the legislature.

In order that the sanitary schemes may be effective and permanent, it is necessary that the steps adopted are radical and that reform begins from within and does not content itself with glossing the surface.

It would therefore be not out of place, at this juncture when the Madras District Municipalities Act is under revision, to invite the attention of the authorities to the pre-eminent need for effective legislation regarding the sanitary administration of Municipal towns.

To illustrate the above, a few examples would suffice. Section 188 of the District Municipalities Act (Madras) makes the carrying of certain dangerous and offensive trades within municipal limits permissive. From the very title it is seen that the trades enumerated therein are dangerous and offensive. If so, why permit them within Municipal limits and breed insanitation while lakhs are spent to remove insanitation? It is an accepted principle that the small fees levied for the grant of licenses for these trades are not to be looked upon as income to the local bodies and it is also an axiomatic truth that the Municipalities, with very few exceptions, if at all, have not taken the necessary additional precaution to free the town from the extra insanitary condition to which the place is subjected in consequence of the carrying on of such trades. It may be that some of them are not very injurious and may be allowed subject to limitations; such, for example, are bakery, ærated-water manufactory, livery stables, etc. But there are others which, in spite of the very best efforts on the part of the local bodies, are a menace to public health and a source of danger to human life. Take for example the brick-kiln; the nuisance caused to the neighbourhood when the kiln is set on fire is better imagined than described, and it continues till the fire subsides. This is not all. The Malarial Board have proved that pools and pits are the breeding places for mosquitoes and that the closure of such pits have effectually relieved the neighbourhood from the attacks of malaria. Why then license similar pits and pools formed in

the neighbourhood of brick-kilns? Such kilns should therefore not only be not allowed within the town but should be removed sufficiently far from human habitations outside.

Dyeing house is another instance in point which breeds insanitation. This is more so in places where there is neither piped water supply nor a drainage system. Washing soiled clothes, storing hides, fish, horns, etc., are other instances of the kind.

PRIVATE SCAVENGING SYSTEM.—It is a fiction of law that the Municipality should enter into a contract with the owner or occupier of a house for the removal of the filth of his house. In the mufassal where most of the houses have compounds, the occupants content themselves with squatting indiscriminately and allowing nature to convert the night-soil to dust, reminded of that truism, ‘dust thou art—to dust returnest.’ No doubt the Act provides for the issue of notices to persons who have their compounds dirty, to have them cleaned within a given time and it further provides a penalty for failure to comply with such requisition. But why such a roundabout procedure in this all-important matter? The local bodies can be made to remove the rubbish, filth and other offensive matter from within every house as they remove the same from without it, *i.e.*, from the streets. The question of finance is not difficult of solution. What is now levied as fees under a contract, may be realized as tax by a proportionate enhancement of house-tax. At present, the occupants are allowed the option of accepting scavenging service, removing rubbish from the back-yards, etc. Most of them are not yet sufficiently advanced to realize the benefits of sanitary surroundings and the Government will be conferring a real boon on the poor rate-payers if the cleansing of the inside of the house is made incumbent on the local bodies in the same manner as the cleansing of streets and roads. Such a compulsory removal will certainly tend to augment the revenue of the Municipality as the quantity of rubbish, etc., now sold or stored, will surely increase. A perusal of the yearly

administration reports of the District Municipalities will clearly show that almost all the Municipalities have had their share of the adverse comment of Government on the question of the tardy extension of the Private Scavenging system to private houses and this unmistakably points to the conclusion that the system of option now in vogue has not proved a success. On this score alone a change in the method of conservancy seems worthy of a trial.

Itinerating Malaria Dispensary.

IN reviewing the report on the administration of Local Bodies in the United Provinces, we referred to the good work reported to have been done by the Travelling Dispensaries in that Province, and we then pointed out that these dispensaries were bound to confer a boon on the rural population, provided they were manned by sympathetic and qualified medical men. We regret to observe that in Madras sufficient care is not being bestowed upon the selection of suitable medical men to be in charge of the dispensaries. We reproduce below the Report of the President of the District Board of Kurnool on the working of the Itinerating Malaria Dispensary in that district for the year 1914, and we hope that the Surgeon-General with the Government of Madras will give his special attention to the proper selection of the medical men. The Dispensary Establishment consisted of one Sub-Assistant Surgeon specially trained for malaria work and a peon. It was provided with two tents, two camp tables, one camp chair, one camp lantern, one hurricane lantern, one camp bed with mosquito curtain, medicines, and one Boxes A and C for keeping drugs, surgical instruments and appliances and microscope with necessary strains, etc. The total expenditure during the year amounted to Rs. 1,574 as per following details:—

Salary of Sub-Assistant Surgeon	...	Rs. 518
Do. Peon	... ..	„ 71
Medicines, Surgical instruments, appliances including microscope	... ..	„ 563

Contingencies	...	...	Rs. 64
Stationery...	...	...	„ 10
Furniture, &c.	...	...	„ 287
Travelling Allowances ...	...	...	„ 61
			<hr/>
			Total Rs. 1,574
			<hr/>

Report :

The experiment has not been a success for the following reasons :—

A good knowledge of the language of the District is essential in the case of an officer in charge of any Dispensary and much more so for an Itinerating Dispensary. Of the officer deputed by the Surgeon-General for this work the first two men knew neither Telugu nor Hindustani. Moreover not only were these two officers ignorant of the language but they displayed no interest in the work at all. The third officer sent to the district knew Telugu but took no interest at all in his work and made no attempt to awaken the interest or to secure the co-operation of the people.

The Board considers that *very few* good men should be sent to work a scheme of this sort which is designed to be the pioneer of scientific treatment of diseases such as malaria, and regrets that the class of officers sent was not even up to the general average. In a district so ignorant and backward as Kurnool it is mere waste of money to entrust pioneer work of this kind which requires tact and enthusiasm, to officers of a class but slightly superior in intelligence and inferior in energy to the people, whom it is proposed to educate. Given suitable officers the Board sees no reason why the experiment should not be a success but unless suitable men are sent the continuance of the experiment will be a waste of money.



Notes.

LOCAL SELF-GOVERNMENT IN INDIA.—The Resolution on the Local Self-Government policy of the Government of India which we have extracted on page 444, was eagerly looked forward to; but when it did appear at last, it has been received almost everywhere with a chorus of disapproval. Some journalists complain that it lacks fervour and enthusiasm; others are angry with what they consider excessive caution in the language of the Resolution; and we are not sure that there are not some official apologists even who wish that the whole thing was more inspiring. We have no desire to add to this volume of discontent. We will endeavour to see how far we are gainers by this retrospect and prospect of the Government of India.

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For one thing, indeed, we should be really thankful, though it is just the thing which several of the leading daily newspapers have been blaming the Government for. In almost every question of any importance, the Government of India defer to the views of the Local Governments. We do not really see how in any other way the cause of Local Self-Government can prosper. Eager politicians are apt to fancy that nothing good can ever come from their own homes or their own provincial Governments, and that Progress is the gift not of patient and honest spade-work, but of the demi-gods who survey mankind from the cool heights of Simla. If the Resolution makes it clear that in future the leaders of public opinion in each province have only to educate their own following and their own Local Government to move forward in the matter of Self-Government, we consider that it is a great gain. If this is the spirit which underlies the excessive caution that is recognised in the attitude of the Government of India, we welcome the sound sense which gave rise to that caution, and can afford to dispense with the enthusiasm which is missing.

Thus Burma is unwilling to release Rangoon from out of her sheltering wings and give her the same status as the Corporations of Bombay and Calcutta. And progressive Bombay is afraid of elected majorities in her rural boards. We are glad that benighted Madras is allowed to experiment with her schemes without waiting for the approval of other provinces. If other provinces regard the suggestion to have unofficial presidents of rural boards as savouring of foolhardy enterprise,—and even the Decentralisation Commission has no good word to say about it,—the Government of India are not prepared to veto the encouraging experiments now being made in this Presidency, but on the other hand are prepared to view with equanimity other Governments catching the contagion of Madras. Here is immense gain, for which we are much indebted to the Government.

* * *

We take the intention of the Government of India to be that, so far as each Local administration is prepared to go or can by force of public opinion be compelled to go, they welcome the expansion of the electoral element in all the local bodies, the substitution of non-official for official chairmen or presidents, freedom to them to frame their budgets, and to make mistakes and to learn by them, more power to be given to them over their own establishments and their own works. Not such a bad pronouncement after all!

* * *

In the case of the larger Municipalities, the Government distinctly approve the scheme which is said to work well in Bombay,—that of having an official executive officer to run the show, the Council having the right to call for the play. We wonder why the Government did not recommend the system in the case of rural boards.

* * *

The Government say that special services such as water supplies, electric lighting, etc., should, as far as possible, be self-supporting. We have no quarrel with the principle, and we recognise that there is great virtue in the limiting words,

“as far as possible”. But we frankly do not like the statement that recurring fixed grants in aid of the poorer municipalities should come entirely from the Provincial Revenues. We are afraid that Madras at any rate cannot regard this as in any way satisfactory.

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The paragraphs dealing with taxation are the least illuminating. We did not care so very much for a narration of the existing system, but we wanted to know if the Government of India had any suggestions to enable the local bodies to obtain growing sources of revenues. Apparently, even their experience has not suggested anything tangible, and we have still to wait for some man of imagination to devise schemes for raising money without offending the people. We notice that the Government are evidently reluctant to raise the rate of land-cess. That is encouraging.

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In the matter of village panchayats, the net gain is, of course, disappointing in the extreme. But then the Government have laid down what they consider to be sound general principles. Where everything was intangible before, there is something definite for us, from which we can continue to press for a substantial structure of village autonomy. Time is on our side, and we see no reason to be pessimistic. Where every one of the Provincial Governments is a laggard, we are glad to see that Madras is the least so, and its proposal to experiment in selected localities, though without any legislative safeguards, to revive the ancient spirit of pride in the village and concern for its welfare, depends only on ourselves to achieve complete success.

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And the concluding words of the Resolution gain a certain force when we see that it is an expression not of a passing enthusiasm but of a deliberate, cold and not over-sympathetic official body: “A spirit of prudent boldness calculating risks, but not afraid to take them.” Excellent words! Let us see how each Province interprets them in actual working.

[Bombay.]

Dharangaon Municipality.

CONSTITUTION.—In exercise of the power conferred by clauses (a) and (b) of section 11 of the Bombay District Municipal Act, 1901, the Governor in Council has been pleased to direct that the Dharangaon Municipality shall, on and after the 1st July 1915, consist of 14 councillors (inclusive of the President), of whom 7 shall be elected and the rest nominated, and that of the nominated councillors, 3 may be salaried servants of Government.

[Madras.]

MASULIPATAM MUNICIPAL COUNCIL.—The Government have raised the maximum strength and the number of elected councillors of the Council to 22 and 14 respectively. (G. O. No. 639M., 23rd April, 1915).

[Bengal]

Calcutta Corporation.

ASPHALTUM PAVING.—On the recommendation of the Chief Engineer, the Corporation of Calcutta has resolved that tenders be invited for the supply of a mixing plant at a cost of Rs. 18,000 capable of laying 1,000 square yards of road per day, and that the roads included in the tar-macadum programme for 1915-16 be paved with the Standard Oil Co's. Asphaltum, at an estimated cost of Rs. 2 per square yard with Portland cement as a filler or Rs. 1-13-0 per square yard with brimstone dust. A representative of the Standard Oil Co. will personally supervise the whole of the work and instruct the Municipal Engineers in the method of laying.

SATKHIRA WATER SUPPLY.—The scheme submitted by the Commissioners of the Satkhira Municipality (Khulna) for providing a water supply to that Municipality has been approved by the Governor in Council. The particulars of the scheme are as follows:—

(a) The scheme provides for supplying a population of 7,000 persons with 4 gallons of water per head per diem to begin with, but the works will be so arranged that they can be

extended to supply 40,000 gallons a day in future. The source of supply will be from the Pranshure dighi, from which the water will be drawn through a floating arm, and pumped through a pressure filter to an overhead reservoir from whence it is to be distributed to the town.

(b) The estimated cost of the scheme is Rs. 43,500.

(c) The estimated cost of maintenance is Rs. 1,500 per annum.

(d) The sum of Rs. 43,500 on account of the cost of the scheme will be met as follows:—

	Rs.
A—Donation from Government ...	26,000
B—District Board grant ...	5,000
C—Public subscription ...	12,500
	<hr/>
	43,500

(e) The annual charge of Rs. 1,500 will be met partly from the water-rate and partly from the general revenues of the Municipality as shown below:—

	Rs.
A—Water-rate ...	1,000
B—General revenues ...	500
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	1,500

(f) The water-rate will be levied at the rate of 6 per cent. on the value of holdings.

(g) The average incidence of the water-rate per head of present population of the said Municipality is estimated at Re. 0-1-6.

[Burma.]

The Minbu Municipal Committee has imposed the following tax with effect from 1st October 1915:—A tax on vehicles kept within the Municipality, to be levied at the following rates:—

(a) Motor-cycles, Rs. 2 per wheel per annum.

(b) Motor-vehicles, other than motor-cycles, Rs. 9 per quarter.

(c) On every vehicle drawn by horse or pony, Rs. 6 per annum.

[Bihar and Orissa.]

PERULIA MUNICIPALITY.—The Lieutenant-Governor in Council has sanctioned the following rules for the management of privies :—

1. A drain must be provided for every privy connecting the floor of the privy with a moveable metal receptacle. It must be made of pucca masonry, well plastered with cement of half round shape and giving a sufficient fall towards the receptacle to ensure the removal of the contents.

2. The floor of every privy—

(a) must, if the Commissioners so direct, be made of one of the following materials, *i.e.*, glazed tiles, artificial stone or cement, or

(b) if no such direction is given, must be made of thoroughly well-burnt earthen tiles or bricks plastered, and not merely pointed, with cement, and

(c) must be in every part at a height of not less than 6 inches above the level of the surface of the ground adjoining the privy,

(d) the floor of every privy must have a fall or inclination of at least half an inch to the foot towards the drain prescribed by rule 1.

3. The walls and the roof of every privy shall be made of such materials as may be approved by the Commissioners, provided the entire surface of the walls below the platform shall either be rendered in cement or be made as prescribed in rule 2.

4. The platform of every privy must be plastered with cement or be made of some water-tight non-absorbent material as prescribed in rule 2.

5. Every privy situated in, or adjacent to, a building must have at least one opening of not less than one foot square in area in one of the walls of the privy as near the top of the walls as may be practicable and communicating directly with the open air.

6. Every privy must be constructed in accordance with the following provisions :—

(a) the space beneath the platform of the privy must be of such dimensions as to admit of one or two moveable receptacles for sewage of a capacity not exceeding one cubic foot being placed and fitted beneath the platform in such manner and position as will effectually prevent the deposit, otherwise than in such receptacle, of any sewage falling or thrown through the aperture of the platform ;

(b) the privy must be so constructed as to afford adequate access to the said space for the purposes of cleansing such space and of placing therein and removing therefrom proper receptacles for sewage ;

(c) the said receptacles must be water-tight ;

(d) the door for the insertion and removal of the receptacles must be made so as to completely cover the aperture.

7. If any privy erected or re-erected after the passing of these rules is so constructed as to contravene any of the provisions of these rules, the Commissioners shall, by written notice, whether or not the offender be prosecuted under the Municipal Act before a Magistrate, require.—

(a) the occupier of the building to which the privy belongs, or

(b) (if the privy does not belong to a building) the owner or occupier of the land on which the privy stands, to make such alterations as may be specified in the notice with the object of bringing the privy into conformity with the said provisions.

[United Provinces.]

DISTRICT BOARDS.—The United Provinces Gazette of the 24th April, 1915, contains rules as to the preparation of estimates of the income and expenditure of District Boards and the authority by whom and the conditions subject to which such estimates may be sanctioned.

DEHRA MUNICIPAL BOARD.—The Municipal Board of Dehra have applied for a loan of Rs. 77,000 from Government under the Local Authorities Loans Act, for Bazaar Electric wiring, &c. The loan carries interest at 4 per cent. per annum and is repayable in ten yearly instalments.

DEHRA DUN.—His Honour the Lieutenant-Governor of the United Provinces of Agra and Oudh has been pleased to grant a license to the Municipal Board of Dehra Dun under Section 3 of the Indian Electricity Act, IX of 1910, for supplying electric energy within the Dehra Dun Municipal limits and adjacent lands.

[Mysore.]

The Government of H. H. the Maharajah of Mysore have issued a note on the improvement of Local Self-Government in the State. We hope to deal with it in the next issue of the *Gazette*.

Public Health and Sanitation.

Flies as Carriers of Disease.

SANITARY authorities have recently been laying much stress on the connection between flies and disease, and it is desirable that a knowledge of the dangers caused by flies should be disseminated widely. It is in the power of inspecting officers in all departments greatly to assist in the education of the public in sanitary matters and to emphasize the importance of keeping dwellings and the land round them clear of the organic refuse in which flies lay their eggs, so as to reduce their opportunities of multiplying. It should be impressed upon the people when opportunity serves, that flies constitute a menace to the health of the community because the hairs on their feet and legs collect germs from any filth on which they may settle and convey them to any food on which they may afterwards alight and also because of their habit of bringing up, when resting, the food they have previously eaten. The danger involved when a fly which has eaten infected fæces, for example, settles on food, is obvious. Flies have been proved to carry and spread the virus of cholera, enteric, dysentery, diarrhoea, ophthalmia and tuberculosis. Officers in the course of their inspections have many opportunities of explaining this relationship between fly-prevalence and disease

and should call attention to any conditions likely to favour them such as—

- (1) Accumulations of the manure close to dwellings.
- (2) Housing of animals in or close to human dwellings.
- (3) Public or private latrines improperly constructed or badly scavenged.
- (4) Accumulations of sullage water, badly constructed or dirty and neglected sullage drains, open cesspools.
- (5) Accumulations of street sweepings, or of house refuse in backyards, etc.
- (6) Exposure of food, milk, etc., to flies in shops and houses.

Flies deposit their eggs in fresh organic refuse, dung, etc. If such matter be buried or burnt within seven days, no adult flies will emerge. When this is not practicable, such matter should, when possible, be removed at intervals of not more than seven days to a distance of one mile or more from inhabited houses.

Kansas and the Filthy Fly.

A POINTED message prepared by the Kansas State Board of Health as part of its campaign against flies is shown in the accompanying card. Customers who object to buying food over which flies have crawled are encouraged to spend their time, while waiting at the butcher's, grocer's or baker's, counting the flies. They may then protest *incognito* by sending to the storekeeper one of the little 1 $\frac{3}{4}$ by 3-inch cards provided by the State Board of Health, bearing in black and white the results of their observation. This looks like an effective way of stirring up the merchants to anti-fly activity. Is not the plan worth trying in other States?—*The American City*.

Flies carry unnamable filth to food.
I counted——flies in your place of
business.

Date.....A Customer.

Infant Mortality.

VERY little attention has been paid to a supplemental report issued by the Local Government Board some time back on infant mortality, but the lessons that it has to teach are numerous and important and local authorities of all sorts and kinds might do worse than take this document into consideration. It forms a supplement to the 43rd annual report of the department, and is compiled by the chief medical officer of the Board, Dr. Newsholme, assisted by Dr. Copeman, Dr. Manby, Dr. Farrar, and Dr. Lane-Claypon, all of whom are medical inspectors under the Board. The reports now dealt with are in continuation of two special reports issued in 1910 and 1913, which reviewed the incidence and the chief causes of infant and child mortality in all the administrative counties and in 241 urban areas of England and Wales. The reports are devoted specially to Lancashire, which county has been specially studied, because it contains nearly a seventh part of the total population of England and Wales and because it has a mortality rate unequalled in any corresponding area of the kingdom. The difficulties that have to be surmounted in such investigations are very great, for the conditions that give rise to this excessive mortality are particularly complex and not readily got at, for whilst one person will declare that infant mortality is wholly climatic and geographical, another will assert that it is racial, and yet another that it is inevitable; the fact remains that the true state of affairs can only be got at by careful scientific investigation and it is this that the Local Government Board set to work to carry out. According to the chief medical officer, the most promising means for securing a successful analysis of the chief factors concerned appeared to be to select groups of towns within the county in which social and industrial conditions and infant mortality differed greatly, and to submit these towns to careful investigation. The various inspectors took different districts and an examination of their reports and of the evidence that they adduce suggests that among the most

important elements conducing to excessive loss of child life in Lancashire are the following :—(1) The continuance of unsatisfactory methods of dealing with excremental and domestic refuse ; (2) unsatisfactory conditions of housing, including deficient arrangements for storage of food, and imperfectly paved yards and back streets ; (3) the industrial employment of married women during pregnancy and after confinement ; and (4) a relatively low standard of life, especially in the areas in which miners are employed. Surely, no more severe indictment could possibly be brought against a community comprising several millions of people—more than enough to make up the entire population of many prosperous countries in the world and roughly about the population of Belgium—for every one of these causes is preventable. It does not say much for the success of self-government in the great principality that after fifty or more years of opportunity to introduce better methods, with a rating capacity unequalled by any other district in the land, we still find such uncivilised conditions of life that thousands of infants are sacrificed year after year to the Moloch of industrialism. A century ago, Lancashire and the adjacent parts were almost wholly agricultural and during that period the population of the Palatinate has increased nearly eight times its original number, and to-day the population is very much mixed in character. Fresh blood has been largely introduced, and although the original population appears to have been mainly Danish, and in the rural portions this strain still survives in the form of a tall, sturdy race, resistant of interference and change, the urban portion of the population is derived from many sources. It is constantly being recruited from the rural districts, and in those towns which border on the rural areas, such as Blackburn, Lancaster, and Colne, it contains a larger proportion of persons of superior physique as compared with other centres of population. Owing to the proximity of Ireland, Wales, and Scotland, the towns contain a large number of people from those countries. The Irish were

introduced in large numbers to work in the cotton mills when the first boom occurred in this industry, and this immigration has continued ever since. Recently, a considerable number of Poles have been introduced to do the heavier work in the coal pits. The census of 1901 showed that nearly a quarter of the population of the county had been born outside its limits. All this re-acts on the conditions affecting the preservation of infant life, and it may be conceded that many of the imported inhabitants bring with them lower standards of living and less regard for infant life, but this in no way suffices to account for the fact that whilst the general mortality rate over the kingdom in the case of infants is 109 per 1,000 births, in some parts of Lancashire the figure is practically double this. It is such problems as how to deal with the infant mortality rate and how to improve the health conditions of the people that must force themselves on our attention at the present time when the enormous wastage caused by the war is considered. This is not a question for Lancashire alone, it is a question for the whole nation.—*L. G. C.*

Reinforced Concrete as Applied to Sanitation.

The Local Government Board and Loans.

IN the course of a paper read by Mr. H. J. Tingle, M. Inst. C. E., at a recent meeting of the Concrete Institute, it was stated that concrete has played its part in sanitation for many years, with more or less success, according to the skill of the designer and the quality of materials and workmanship. The tendency in recent years has been to employ concrete more and more, and this tendency in the future is sure to extend its use in directions where now it is scarcely applied. Sanitation works have been particularly affected by the attitude of the Local Government Board towards reinforced concrete as such works are generally undertaken by local authorities, who have to obtain the sanction of the Board to

the raising of a loan for the amount of capital expenditure, or else to obtain Parliamentary powers by means of a Private Act.

The great majority of authorities, however, adopt the first of these two courses of procedure, and the practice of the Board is in the case of reinforced concrete for works in contact with water or sewage, to require the capital sum to be paid off in a period of ten years, while in the case of ordinary concrete, under the same conditions, the period of repayment is thirty years. In cases where, in addition to reinforced concrete in contact with water, the periods for the loans in each class are sometimes equated together, and the loan for the whole granted for the period given by the equation.

Doubtless in the early years of reinforced concrete, the Board were well advised to act cautiously in the matter of sanctioning loans for the use of a combination of materials of which, in this country, there had been scarcely any experience, either as to its suitability or as to its life in sanitation works. The effect of this differentiation on the part of the Board in the treatment of concrete, and of reinforced concrete, has been to curtail the employment of the latter in public works of sanitation. It is clear that, under the present conditions, where the loan is obtained for reinforced concrete, the burden thrown on the ratepayers annually to repay the principal and interest in equal annual instalments spread over ten years would be more than twice as great as for a loan of equal amount and rate of interest obtained for ordinary concrete, to be repaid in equal annual instalments in thirty years.

The following example will illustrate the matter:—If £1,000 be borrowed at $3\frac{3}{4}\%$ interest, to be repaid in equal half-yearly instalments of principal and interest for a term of ten years, the amount to be paid each half year equals £60-8s-6d., which is 116% of £28. Under these circumstances it is only natural that most authorities elect to use ordinary concrete in order to ease the burden on the present rate-payers, and throw part of it upon the ratepayers of the future.

The effect of this differentiation amounts to this, that unless the cost of the works can be considerably reduced by the employment of reinforced concrete as compared with ordinary concrete, there is but little probability of local authorities deciding in favour of the former. The requisite saving may be effected in some instances, but, so far as the experience of the author goes, this is not generally the case.

With the experience that has now been obtained relating to the behaviour of reinforced concrete that is constantly in contact either with water or with sewage, it is permissible to hope that the time is not far distant when the Local Government Board will reconsider its attitude towards this material, and, in cases where it is proposed to make use of it, will sanction loans on more favourable terms as to the period of repayment than those now in force.

Concrete has been and is now extensively used in the construction of reservoirs, sewage tanks, filters, aqueducts, and water towers. Full descriptions of these works are to be found in technical journals and volumes of proceedings of the various Engineering Societies. The same holds good for similar structures in reinforced concrete, though to a more limited extent; but numerous examples are given in the catalogues issued by the various firms specialising in this class of work.

Mass concrete has been largely used in the construction of sewers of 4 ft. diameter and upwards. It is moulded in the trench, and supported by centering until set. Elliptical sewers are also constructed in this manner. In recent years reinforced concrete has been employed for sewers of both types, the mixture being sufficiently stiff to admit of ramming. Concrete tubes, unless strongly reinforced, should be laid on a concrete bed not less than 6 in. in thickness, and the concrete brought up round the tube as far as the springing. By the omission of this precaution many failures have occurred. In tubes liable to internal pressure, the concrete should entirely

surround them. The tubes have ogee, rebated joints which are luted with cement and the inside pointed up.

Reinforced-concrete pipes have been used for water mains at Swansea against heads of 246 ft. and 500 ft., at Norwich for sewage rising main, head 131 ft., and at Clydebank for water, head 390 ft., and are about to be laid at Leeds for water. They have been largely used on the Continent, and 119 miles of 10 in. to 48 in. water mains were in course of construction in Flanders at the outbreak of the war. They have also been largely used in Paris. Twenty years since the municipality laid down one mile of 6 ft. in diameter as a rising main for sewage head 115 ft., in a gallery alongside a steel riveted main of the same diameter. It has been found that the steel main requires considerable maintenance, and the concrete tube none. Concrete tubes are constructed to form manholes, water tanks and cesspits. Sewers, reservoirs, manholes and so forth are constructed with moulded blocks of concrete which are supplied by various manufacturers.—*Surv.*

Cast Iron or Steel Pipes.

THE controversy which has raged as to the relative merits of cast iron or steel pipes has been chiefly between manufacturers. It would probably have received little attention but for the fact that the Local Government Board clearly regards the life of the steel pipe as being considerably less than that of the cast iron pipe. Notwithstanding this, the use of the steel pipe in this country has increased enormously and the trade last year was exceptionally good, under the present particularly difficult condition. The lake in St. James Park has a concrete bottom on which a long line of coated steel water pipes were laid some years ago. This lake has been empty of water for some time past and the pipes are exposed for their whole length and it is possible for the observer to see the extent to which the coating has preserved the outside of the pipes—which are generally covered by the water. Experience certainly points to the fact that the corrosion of pipes whether of iron or of steel depends upon the quality of

water. There are very many instances of the serious corrosion and failure of cast iron pipes and of the corrosion and failure of steel pipes. The use of either pipes must depend upon a number of conditions which the Engineer must take into account and before he can come to a right decision he may need the assistance of a chemist and possibly even that of the bacteriologist. The saving in cost is evident with the steel pipe and its life is dependent entirely upon the quality of water passing through it and in a lesser degree upon its coating. It is also dependent to some extent upon the character of the ground in which it is laid but the outer coating being thicker and open to inspection may be made in such a manner as to afford efficient protection. Whether the use of cast iron pipes is sometimes justified by habit rather than by expediency should be considered. The considerable saving of expense is not to be ignored. If the cast iron pipes were made twice as heavy, they might last longer but the expense would not be justified. It may be asked whether the cost of the heavy cast iron main in place of the steel pipe is justified either.—*Surv.*

Drainage and Water Works Schemes.

Construction of Sewers.

AN interesting discussion on this subject took place at a meeting of the Royal Sanitary Institute recently held at Manchester. The discussion was preceded by a lantern lecture by Mr. S. S. Platt, M. Inst. C. E., the borough surveyor of Rochdale. A great portion of the ground covered by the lecturer was necessarily familiar to most of the municipal engineers attending the meeting, but as there were a large number of young engineers and students present, this was not a disadvantage from the educational point of view. The numerous slides shown, especially those

lent by Mr. de Courcy Meade, M. Inst. C. E., giving the details and methods of construction of the Manchester main sewers, were particularly interesting and instructive. In the discussion which followed the lecture several speakers dealt with the use of concrete versus earthenware or stoneware pipes, or brick sewers. The feeling of the meeting appeared to favour the use of concrete for pipes of 2 ft. or a larger diameter, though a brickwork lining for large concrete sewers constructed in situ was preferred. Except on the ground of cheapness, a lining of vitrified brickwork is much preferable to a cement rendering, as the bricks are more reliable and can be thoroughly tested before use. It is not usual to test the quality of concrete in situ other than by testing the quality of the cement and the careful inspection of the proportions and nature of the materials when being mixed. A close examination of the surface of the sewer, or cutting into the work in some cases is necessary, but it is obvious to anyone having a practical acquaintance with concrete sewers on a large scale that the concrete tube or vitrified brick allow of much more satisfactory test, and will therefore inspire more confidence in their use.

Another point discussed was the method to be adopted in hilly districts, so as to avoid too steep gradients in the sewers and to prevent the ascent of sewer gas from the lower to the higher levels. While all the speakers were agreed as to the necessity for avoiding as far as possible steep gradients, so as to prevent too great velocities and the consequent erosion in the sewers, they were by no means agreed upon the form of ramp to be adopted or the necessity for traps and valves on the sewers. Many local authorities do not now insist on traps on house drains, and at their best they can only be looked upon as necessary evils. In sewers their use is certainly undesirable, and vent shafts carried to a sufficient height to discharge any sewer gases safely appear to meet all the requirements of the case, while they are at the same time free from the objections urged against the use of flap valves and traps.

The amount of storm water to be provided for in the sewers was also discussed. This is perhaps the most difficult of all the problems with which the sewerage engineer has to deal, and it is one on which there is a greater variation in practice than in almost any other branch of municipal engineering. When we find two cities so very similarly situated in many respects as London and Liverpool, in which the variation in the amount of storm water to be carried by the main sewers is equal to $\frac{1}{4}$ in. per twenty-four hours in the one case and 6 in. in the other, it is evident that there is something besides local conditions to account for this great difference. There are many formulæ for determining the amount of rainfall which will reach the sewers, but there are so many factors to be taken into consideration, and local conditions are so variable, that the best of them is only approximate, and requires to be used with great care and judgment. The need for using the heavy Accrington engineering or Staffordshire blue brick was questioned by Mr. Cooper. He appeared to consider them unnecessary in the London district, but for durable and sound work a harder brick than the London stock brick or the gault brick is certainly desirable, and would in the long run prove the most economical.—*Surv.*

Mechanical Filtration.

MECCHANICAL filtration has recently been dealt with very fully by the ENGINEERING RECORD of New York. Owing to the difficulties encountered in the under-draining, washing, and air pressure systems in use, and to the difference in opinion existing among Engineers, several operators and engineers were asked to give their views and experiences. The essential difference between the mechanical filter and the ordinary sand filter is in the washing and agitation of the sand by means of air and wash water forced in below the sand layer; thus the under-drain practice is the most important matter in relation to the subject of mechanical

filtration. It is possible to pass water through a 30-inch layer of sand at a quick rate according to the pressure due to the head of water, but the sand is naturally clogged thereby at a quicker rate, and needs to be cleaned. In order to clean the sand, water was admitted below the sand layer. The simplest form of filter generally had a false bottom of perforated metal, upon which rested the sand sometimes or a layer of gravel. When water was admitted below the false bottom it was apt to result in unequal distribution, especially with high pressure. Thus some form of agitator was found to be necessary in order to clean the sand, and mechanical and air agitators were used. As an improvement, a system of channels upon which perforated grids were fixed was invented, and the water was admitted at many points, thus giving a better distribution of wash water. Air agitation of sand was introduced, compressed air being admitted under the strainers, passed up through the gravel and agitated the sand, washing being thereby facilitated. This sometimes had the effect of displacing the gravel, and it was sought to overcome the difficulty by increasing the depth of the gravel or by fixing screens above the gravel. Another plan was to discharge the air above the gravel layer. The velocity of the flow of the wash water has generally been low to clean the filter, unless the sands were disturbed by air pressure or by mechanical means, but in the more modern system a higher velocity of the wash water has been given, and this gives such a good result that agitation by the wash water currents is so satisfactory that other methods of agitation are unnecessary.

The use of high wash water velocities has made some method of keeping the gravel in place necessary, and thus great attention has been given to the perfecting of methods. Several points have to be borne carefully in mind. The sand must not be washed away, although it must be thoroughly agitated and cleaned. The gravel layer must not be disturbed, and the sand must not pass through the gravel layer into the under-

drains. Some difficulty has also been experienced through strainers coming loose or wearing out, while an uneven surface at the side of the tank may cause the formation of a ring clogged sand, which cannot be easily removed. The filters, first made in circular iron or wooden tanks, are now generally made in rectangular concrete tanks in the case of large installations, so that care is required in forming the interior surface is obvious. It must not be supposed because the construction of mechanical filters has been perfected that those filters put in ten years ago have proved to be unsatisfactory. On the contrary, it is remarkable that the shortcomings reported are of minor importance, and that excellent results have generally been obtained. There is every reason to suppose that with the perfection of designs the economical working of the system will be improved.

Mymensingh Municipality.

W^E are obliged to Mr. N. K. Gosh, Chairman of the Mymensingh Municipality for the following particulars regarding the Drainage and Water Supply Schemes of Mymensingh:—

DRAINAGE.—The scheme for the improvement of the town drainage has been under consideration for the last thirty years and was finally designed by Mr. G. B. Williams, Sanitary Engineer to the Government of Bengal. The estimated cost of the entire scheme was approximately Rs. 1,14,000, but for the present, the drainage of two blocks comprising the main congested Municipal area has been recommended by the Sanitary Engineer to be carried out at a cost of about Rs. 97,000. The work consists of 15,846 ft. pucca drains, 1,15,448 ft. kutchra pucca drains and 11,150 ft. kutchra drains, with outfalls towards the beels situate to the south and south-west of the town. It has been proposed to finance the scheme by means of a loan from the Local Government supplemented by a grant-in-aid. The Municipality on

the recommendation of the District Officer resolved to take a loan of Rs. 45,000 and apply to the Government for a grant of Rs. 45,000, in order to carry out the scheme, the balance of Rs. 7,000 being met from the Municipal revenue.

The question at present before the Board is how to repay this loan of Rs. 45,000 with interest in 20 years, the Municipal fund being insufficient to meet its normal expenditure. The most practical solution of the question is either to raise the percentage of the present tax or to substitute a rate on holding in lieu of the tax on persons which is now in vogue. The Commissioners, being averse to raise the taxation either way, have resolved to finance it by reducing their present normal and necessary expenditure to the extent of Rs. 3,000 annually, and thereby to provide a sinking fund. With this financial proposal they applied to the Government for a loan of Rs. 45,000 and a grant of a similar sum and submitted the drainage scheme for administrative sanction. The Government considered the proposal of the Municipal Commissioners as unsound and refused to give any grant or loan for the purpose of the scheme unless, as recommended by the Sanitary Board, a rate on holding at 7% be substituted. An opposition has been set up against the proposal for substituting a rate on holding by the section of the community which owns house properties within the Municipality. The matter is still pending the final decision of the Commissioners.

WATER WORKS.—The Water-works Scheme which has been investigated and designed by the Sanitary Engineer, Mr. Williams, provides for further improvement of the existing water-works plant.

The existing water-works owe their origin to the liberality of the late Maharajah Suriya Kanta Acherjea of Mymensingh who made a munificent donation of Rs. 1,14,000 in commemoration of the name of his late lamented wife Rani Raj Rajeswari Debi. The water-works were accordingly named after her "the Raj Rajeswari Water Works."

The initial cost of the original work was Rs. 1,42,764 out of which the District Board of Mymensingh contributed Rs. 30,000. It was opened in 1893.

The consumption of water having increased consequent on the increase of population, the works for augmenting the supply were inaugurated in 1912 at a cost of about Rs. 60,000. The expenditure was met partly from loan and partly from Government grant.

The daily average consumption is about 195,000 gallons or about 11 gallons per head of population.

The proposed scheme for further improvement of the works comprises:—

1. One overhead supply tank measuring 33' diameter by 11' height with a capacity of 60,000 gallons	Rs. 19,500
2. A Jewel or other Mechanical filter capable of filtering 12,000 gallons per hour and a filtered water reservoir, one steel settling tank of 50,000 gallons capacity	31,000
3. An underground masonry reservoir of 50,000 gallons capacity ..	8,500
4. Remodelling of the jetty with an additional suction pipe of 9" diameter	8,500
5. Independent supply main and distribution system	16,000
	<hr/>
	83,500
Contingencies and supervision	8,500
	<hr/>
Total estimated cost	Rs. 92,000

It is expected that the plant after improvement will be capable of delivering 250,000 gallons per day. The Municipal Commissioners have accepted the scheme and have proposed to finance it by means of loan and grant. The Municipal Board as advised by the District Officer have applied to the Local Government for a loan of Rs. 50,000 and a grant of Rs. 42,000 and have submitted the scheme for administrative sanction. The working balance of the water rate fund is expected to be sufficient to enable the Board to repay this loan in 20 years without any increase in the water rate.

The water-works and the drainage schemes were both simultaneously submitted to the Government by the District Magistrate and the Divisional Commissioner with their recommendation for the sanction of the loans and grants applied for, in case the Municipal Commissioners agreed to substitute a rate on holding at 7%.

The Government have combined these two schemes as one, and the Sanitary Board while approving the schemes were of opinion that the proposals of the Municipal Commissioners for financing the schemes were unsound and were unable to recommend them to the Government for their administrative sanction unless the proposals were revised; they have further intimated their inability to recommend to the Government the grant of any funds in aid of either of the schemes unless a rate on holding at 7% was substituted in place of the tax on persons. The Government are willing to advance Rs. 1,82,000 by way of loan and grant for carrying out the two schemes. But unfortunately there is an opposition to the drainage scheme as it involves an addition of a pice in the rupee to their present rate. The Municipal Commissioners have now arrived at a juncture when they should soon decide whether they would agree to the small increase in the rate and avail themselves of the generous offer of the Government or lose the benefits of the proposed sanitary schemes.

Government Orders and Notifications.

[Bombay.]

THE following notification has been published by the Bombay Government: Whereas it appears to the Governor in Council that the period of four years for which the Municipality of Rájapur was superseded by Government Notifications in the General Department, No. 2700, dated the 4th May 1911, and No. 3902, dated the 18th May 1914, is insufficient for the purpose of rectifying the effects of the incompetence and default of the said Municipality, now

in exercise of the power conferred by section 179, sub-section (3), of the Bombay District Municipal Act, 1901 (Bom. III of 1901), the Governor in Council is pleased to continue the said period of supersession until the 3rd November 1915. [N. No. 3506, dated 28-4-15.]

[Madras.]

PROVINCIAL GRANTS.—The Madras Government have sanctioned the distribution of a sum of Rs. 7,99,779 among certain Municipal Councils for municipal works executed by the P. W. D. made in the Civil Budget Estimate for 1915-16 under the head Medical—Sanitation and Vaccination. (G. O. No. 667 M., dated 30-4-15).

A NEW UNION.—The Government has approved of the proposal of the Taluk Board of Mayavaram and the District Board of Tanjore to constitute certain villages into a Union called the Vaitiswaran Koil Union. (G. O. No. 537 L., dated 1-4-15.)

Legislative Intelligence.

[Parliament.]

MOTOR LORRIES.—Sir J. Spear asked the Chancellor of the Exchequer if, having regard to the damage done to public roads by motor lorries, he will, in the forthcoming Budget, increase the tax on these vehicles in order that the owners shall thereby make a more equitable contribution towards the repair of the damage than is at present the case?

Mr. LLOYD GEORGE: I fear I am unable to anticipate my Financial statement.

The City of Bombay Municipal Act.

THE Bill to amend the city of Bombay Municipal Act is published in the Bombay Government Gazette. Various defects in the working of the Act have from time to time been brought to the notice of Government. The

object of the Bill is to remedy these defects. The purport of the main clause is explained below :—

Clause 2.—The new definitions in section 3 are found to be necessary; those of “bakehouse” and “premises” follow the definitions in the English Acts, namely, the Factory and Workshops Act, 1901, and the Public Health (London) Act, 1891, respectively.

Clause 3.—The manner in which section (301) (1) has been interpreted by the Courts has led to the payment of exorbitant claims as compensation. The proposed amendment will result in owners being fully compensated for the loss sustained by them, but at the same time it will protect the Corporation from inordinate demands. The proviso allows for betterment as well as for damage to the property.

Clause 4 to 7.—(1) The group of amendments to sections 327, 338 and 342, the new section 347A, and the consequential amendments to sections 471 and 472, appertain to the construction and use of buildings.

(2) The main object in view is to prevent builders from evading the rules regarding open spaces outside living rooms, as some of them do at present on the pleas—

(a) that the buildings containing these rooms are not new buildings to which alone section 348 applies;

(b) that the rooms are not rooms intended for human habitation to which special by-laws apply;

(c) that the rooms are not in chawls for which the Municipal by-laws require a minimum open space of 5 feet, but that they are in other buildings for which a minimum open space of only two feet is required.

(3) (a) to meet the first plea the definitions of “erecting a building” and consequently, of “a new building” in section 337 are expanded;

(b) to meet the second plea it is proposed to compel owners to show on their building plans what rooms are not

intended for human habitation, and to prohibit them from thereafter using those rooms for human habitation ;

(c) to meet the third plea, it is proposed to penalise the unauthorised use of a building as a chawl, if it was not originally designed as a chawl.

(4) Proposals 3 (b) and 3 (c) will be carried into effect by the new section 347 A and by the amendments to sections 338 and 342. The amendments to sections 471 and 472 are consequential.

All these amendments have been proposed and approved unanimously by the Corporation.

Clause 9.—Under section 305 of the Act the Commissioner has ample power to deal with private streets which the Corporation are prepared to take over as public streets. But there are many private streets which the Corporation are not prepared to take over, and as section 377 as it stands does not apply to private streets, the section has been amended so as to make it do so, with the result that it will be possible to ensure that these streets are kept decently clean.

Clause 10.—The amendment of section 384 will enable the Municipality to prevent the stabling of horses and other animals, and the keeping of grain godowns and groceries for wholesale trade purposes, in buildings used as dwellings ; this practice is clearly objectionable, as the flies and rats, which are bred in proximity to dwelling houses, often cause the spread of infectious diseases. The alteration of the heading is consequential.

Clause 11.—Section 390 has been found by the executive to be inadequate. By section 514 a prosecution for breach of the provisions of section 390 must be instituted within three months of the establishment of the factory. Consequently if a newly established factory evades the notice of the Health Department for three months, not only does the promoter escape liability but also the factory cannot be discontinued. Again, if a factory has been discontinued as

the result of a successful prosecution, there is nothing in the present law to prevent the resumption of work at the factory. because resumption of work does not come within the meaning of new establishment. Also a purchaser from an establisher is beyond the reach of the law, and, finally, no provision exists for continuous punishment of an offence which is likely to be continuous. These defects have been remedied.

Clause 12.—The Corporation have at present no power to make by-laws regulating the construction of horse and bullock stables. The addition to clause (1) gives them power to make by-laws for this and for other cognate purposes.

Clauses 8 and 16.—The amendments to Schedule M and the insertion of section 375A, with consequential amendments to sections 471 and 472, are proposed so as to enable the Corporation to deal efficiently with premises used for storing building materials and other articles and with bakehouses and public eating-houses. Section 375A is necessary as it has been held that section 377 (1) does not meet the case of building materials which harbour rats and other vermin.

Similarly the amendment of Schedule M is required because section 394 read with Schedule M does not at present clearly cover the case of eating-houses.

Clauses 13 and 14.—The amendments are consequential.

Clause 15.—Since the boundaries of the several wards into which the City is divided were defined, the City has been extended towards the sea in some places by reclamation made by the Port Trust and the City Improvement Trust. The only changes that are necessary in the descriptions given in Schedule B are in respect of the northern and eastern boundaries of the Byculla Wards and the southern and eastern boundaries of the Parel Ward.

[Madras.]

The Hon'ble Dewan Bahadur V. Ramabhadra Nayudu asked whether, considering the ignorance of the people in

rural areas in matters affecting sanitation, personal health, science of agriculture, diseases of plants, etc., the Government would be pleased to arrange for the giving in every village, by the Health Officers of Districts and Agricultural Inspectors, of model lectures on those subjects accompanied with cinema or magic lantern exhibitions ?

Government replied as follows :—As regards sanitation and health, the Hon'ble Member is referred to G. Os. No. 22 L., dated 3rd January 1913, No. 2094 L., dated 20th November 1914, and No. 2265 L., dated 18th December 1914, which have already been placed on the Editors' Table and indicate the action taken by the Government in the direction suggested. The procedure adopted for the popularization of new and improved methods of agriculture is detailed in G. O. No. 243, Revenue, dated 24th January 1914, also published, which shows that in certain cases recourse has been had to magic lantern lectures. It is obviously impossible under existing limitations as to staff to undertake to give lectures in every village, but the Director is fully alive to the importance of disseminating agricultural knowledge among the ryot population and will do all that is possible with the means at his disposal.

At a recent meeting of the Legislative Council of Madras, the Hon'ble Rao Bahadur M. Ramachandra Rao moved the following resolution :—

“That this Council recommends to His Excellency the Governor in Council that where a taluk board's income exceeds a lakh of rupees, the advisability of constituting as far as possible a separate taluk board for each revenue taluk under the board should be considered.”

After some discussion, the resolution was amended in the following form and put to the vote and agreed to :—

“This Council recommends to the Governor in Council the consideration of the desirability of reducing the area of the jurisdiction of taluk boards, wherever desirable, in the interests of administration.”

[Punjab.]

The Hon'ble Rai Bahadur Ram Saran Das asked when the privilege of electing members to the Municipalities will be restored in Hissar and Bhiwani ?

The Hon'ble Mr. Mant replied that the elective system had already been re-introduced in the Municipality of Hissar, but that it was not considered desirable to restore the system in Bhiwani at present and that the question would be reconsidered in 1916.

[Bihar and Orissa.]

At a recent meeting of the Legislative Council of Bihar and Orissa the Hon'ble Babu Braja Kishor Prasad moved the following resolution :—

“That this Council recommends to the Lieutenant-Governor in Council that the privilege of electing their Chairmen may be extended to those Municipalities to which it has not as yet been extended, and further, that necessary action be taken to make officials ineligible for election or nomination as such Chairmen.”

After some discussion, the resolution was split up into two parts and slightly amended. The first part of the resolution as amended, viz., “that this Council recommends to the Lieutenant-Governor in Council that the privilege of electing their Chairmen may be extended to some of those Municipalities in the province to which it has not as yet been extended,” was put to the vote and carried unanimously. The second part of the resolution was, by leave, withdrawn.

Recent Publications.

MARKETS FOR THE PEOPLE. By J. W. Sullivan, New York : Macmillan Company.

PROBLEMS OF COMMUNITY LIFE. By Seba Eldridge, New York : Thomas Y. Crowell & Co. Price \$1 net.

THE MODERN CITY AND ITS PROBLEMS. By Frederic C. Howe, New York: Charles Scribner's Sons. Price \$1.50.

THE TEACHING OF CIVICS. By Mabel Hill, Boston: Houghton, Mifflin Company. Price 60 Cents.

CONSUMPTION. A Curable and Preventable Disease. By Lawrence F. Flick, M.D. (Seventh Edition). Price \$1.09.

Notes of Cases.

CONTROL OF STREETS AND HIGHWAYS.—The Supreme Court of Illinois, in *Martins vs Brody*, (160 N. E. R. 266) in considering the respective spheres of authority of the State and Municipality in a public street running through the city, found that while the authority of the State had been delegated to the Municipality, such delegation of control was for the benefit of the citizens of the whole State, and that any discrimination as to use of the street operating against the people of the State in general and in favour of those of the Municipality itself was invalid.

Practical Points.

(The questions of subscribers only are answerable in the Gazette. The name and address of the subscriber must accompany each communication which must be legibly written.)

10. *Revision of an assessment to profession-tax in the 2nd half-year on the ground that the assessee's income during that period was different from what it was in the first-half year whether legal.*

During the 1st half of a year, a clerk drew Rs. 40 and was assessed accordingly to profession-tax under the provisions of the Madras District Municipalities Act. During the 2nd half of the year he was promoted to an office carrying a salary of Rs. 50 per mensem. The Chairman revised his classification and demanded an increased tax. Was his action legal?

ANSWER. The Chairman's action would appear to be not permissible under the provisions of sections 52 (2), 54 (2), 56 and 101 of the District Municipalities Act. The tax is a yearly tax though made payable in two equal half-yearly instalments for the sake of convenience and the classification of assessesees must be a classification for the whole year and cannot be varied during its course. See also article 87 of the Municipal Account Code. A half-yearly liability is, however, incurred in respect of the profession-tax by the tax-payer, see *Wilson v. The President of the Municipal Commission, Madras*, I. L. R. 8 Mad. 429 which was a case under the Madras City Municipal Act.

The Local Self-Government Gazette.

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Local Self-Government in Mysore.

IT is a highly significant sign of the times that, in a country like India where the bureaucratic spirit has been the leading settled characteristic of the administration under British rule, there should have been published about the same time two documents on local self-government—the one from the model native state of Mysore, and the other, a declaration of policy in regard to this important matter, by the Government of India. The growing complexity of social interests and activities has raised administration to the dignity of a science—not the least delicate and difficult part of the art of it being the adjustment between local and central agencies of administration. The science of Administration has already attained to such a degree of importance in Europe that those responsible for it felt justified in organising an International Congress of Administrative Science which met in 1910 at Brussels in more peaceful times. As administrative complexity increases by the advancing evolution of societies, centralised administrations become impossible, and at least so far as those based on British administrations are concerned, the urgent need for devolution of some kind is keenly felt. The central governments then throw off some of the responsibilities which they feel they could not adequately discharge, on local bodies, either of their own creation or of historic evolution. Where it is the former it is the English system, and local bodies have no more authority or power of initiative than what the central government chooses to delegate by legislative enactments or

executive orders. In most of the Continental States, except Russia, the opposite system seems to have the greater vogue. The local bodies exercise all the authority and discharge all administrative duties that are not expressly taken away from them by the central government. So long as the administrative ideals are what they should be, it is obvious that no hard and fast rule of division is possible, and no scheme of administrative devolution has any chance of success unless there is the utmost sympathy between the local bodies, whatever they are, and the official body of the general or central administration. In the words of the Chairman of the International Congress referred to already, "Administrative science is complex in its elements. It embraces, first, knowledge of the law; secondly, the technical science relating to each branch of the administration—financial, economic, social, sanitary, commercial, engineering, æsthetic, and so forth; thirdly, the science of government. The fundamental principle of the matter is that, administration existing not for itself, but solely for the general good, a strict relation between the two must be established and maintained. The social necessity of administration legitimises its existence, but it also limits the extent of its jurisdiction. The law of the equilibrium between the public interest and administrative action sums up the whole of the governmental science of administration". This law condemns officialism, formalism, and bureaucracy, ordaining that "a wise and fruitful decentralisation shall stimulate the circulation of life in all the veins of the social body, to every degree of the hierarchy, to the most remote grouping of population in the country, at the same time that it gratifies the citizens with the widest measure of individual liberty compatible with the good and peaceful conduct of public affairs. *The Governmental Science of administration would lack a basis without a true understanding of social facts, an exact knowledge of the mentality of the people, a just appreciation of their ideas of discipline and order, a faithful estimate of their powers of contribution and*

of their taxable resources. It is, in short, important that the administration should be in a position to judge scientifically of the extent to which its intervention is legitimate, necessary, and tolerable, according to the degree of economic development, of civic morality and of intellectual culture of the masses subjected to it".

In British India local self-government has had a long period of probation under British rule, having been as old as the Russian at any rate. The time has certainly arrived for an enlarged application of the principle already accepted, and we should have been better pleased if the document issued by the Government of India had been one of a practical scheme of expansion rather than a mere "declaration of policy". There are legitimate grounds upon which the actual course adopted by the Government of India may be justified, and these go a long way to prove that the working out of any scheme with beneficial results depends upon the active sympathy of the Executive of the Administration. How far there is the requisite cordiality and community of interest between the local bodies and the administration, actual experience so far does not pronounce definitely.

It is here that the Indian States have the advantage and ought easily to lead the way. It is demonstrable that the extraordinarily great wealth of the Kings under Hindu rule has been due entirely to a judiciously large measure of devolution that Hindu administrations, in this part of the country at any rate, had adopted. An equally large measure of devolution ought to be possible now; but the practical difficulties in the way are far from negligible. What has been felt in the case of the development of the Russian Zemstvos, namely, the adjustment of the relation between the local land-owning gentry and the others who could not be relegated to a subordinate position under modern conditions, need not stagger one at the commencement, as in the circumstances the so-called higher classes can be trusted to adjust themselves to the changed conditions of modern requirements.

Judged by this standard, the note issued by the Mysore Durbar does not seem to us to go far enough—not even as far as the Government are prepared to go in British India. This is due to the special circumstances of Mysore. The note makes it abundantly clear that in this particular, recent experience has been rather discouraging. The Government of His Highness the Maharajah find that their Municipal Regulation and their Local Government Regulation have not been carried out as far as they might have been. They do not hold any one to blame for it, but do wish now that the attempt in this direction be carried further on the lines of progress in Madras. We would point out here that the State of Mysore has at least 25,000 square miles of area and has about 16,500 villages scattered over distances, making grouping of villages a matter of very considerable difficulty. The low state of education of the masses is yet another difficulty but this is not peculiar to Mysore, nor is this education of the masses a necessary condition precedent to the people being allowed to look after local affairs. What is a far more serious difficulty is that the advising and directing staff in various matters are people whose notions are likely to be western with a rather thorough ignorance of the east. It is here that there is the likelihood of a failure to see eye to eye between the two classes whose co-operation is essential. The note under advertance does not seem to recognise this difficulty.

• The note begins with laying down the ordinarily recognised principles of local self-government, and states that the goal of our system of local administration is to entrust the entire responsibility for the management of local affairs to local bodies, thoroughly and wholly *representative* of the people, (not necessarily representation by classes or communities) with sole powers to elect their own Presidents and Vice-Presidents, raise the necessary funds, determine the conveniences to be provided, and appoint and control the executive staff necessary to give effect to their resolutions. It then passes in review the existing conditions in regard to local self-government

generally, and lays considerable emphasis on Committee work rightly enough, quoting with approval that local committees are in fact, "the second pillar upon which the true self-government of English towns rests". The note finds the defects of the existing system to consist in large financial contributions that local bodies have to make to the Government Departments in return for services rendered, their limited initiative, want of definiteness as to their limitations and a certain amount of official dominance. In respect of rural areas, it is found that the existing Regulations are defective and the Unions have failed to serve as local units; the note condemns 'the present control over local bodies even in matters of detail' as inexpedient.

The recommendations made partake of the character of a general devolution in respect of Education, Sanitation and Muzrai, with powers to local bodies to incur larger expenditure on Public Works, &c. There are also certain directions laid down in regard to their budgets and resources. One point we would specially invite attention to is the vague control that is given to the respective Government departments over the local bodies. It is in this discretionary power that the actual danger lies. The success or failure of the measure will depend upon the wise moderation with which these discretionary powers of interference are exercised by the Government Departments concerned. In Continental Europe there are special courts to take cognizance of cases in their behalf. In England it is the ordinary courts. The Mysore note seems not to contemplate anything in this behalf. Let us hope that this safeguard would, in actual experience, prove to be quite unnecessary. We would close our review by inviting the attention of those concerned to the various particulars of local self-government under Hindu rule, which the articles of Professor S. Krishnasawmy Ayyangar in the *Commonweal* place before the public. If the wise moderations that Governors and Viceroys displayed under Hindu rule, and the confidence and cordiality that existed between the Government

and local bodies then could be called into existence now, we are assured of a large and beneficent future for Local Self-Government in the country.

Waste in Municipal Water Supplies: Its Detection and Prevention.

[BY J. W. MADELEY, M. A., M. INST. C.E., M. AM. SOC. C.E.,
SPECIAL ENGINEER, CORPORATION OF MADRAS.]

PERHAPS the most important duty of a Municipality is to provide an adequate supply of wholesome drinking water throughout the area it controls. To carry out this duty, the co-operation of the inhabitants in preventing misuse and waste of water is essential.

Importance of stopping misuse and waste.

A single hole, the size of a pin-head, may cause waste of water enough to supply 50 persons and a hole as large as a pencil would waste sufficient water to supply 750 persons. It is thus obvious that a number of small leaks will render insufficient a supply which would otherwise be perfectly adequate to the needs of the people.

Similarly, misuse will also cause the best of supplies to be insufficient. For instance, a single tap left open all day for watering a garden may deprive a thousand persons of the water necessary for a healthy existence.

Loss of water may occur either through leakage of mains, house connections, and house fixtures, improper use, or wilful waste. Only by constant attention can the loss from leaking pipes and defective fittings, be kept within reasonable limits. The writer has himself seen in Madras house service pipes with gaping rust holes, and main pipes almost eaten through by rust. When water mains are bared in Madras, it is common to find numerous leaking house services; and many small leaks account for a large total loss which will be quite invisible in porous soils, such as sand or gravel.

It is thus of the greatest importance that every source of leakage and wastage should be stopped.

One way of curtailing waste which does not involve stopping leakage is to restrict the supply to a few hours of the day by turning off the water; i.e., providing an "intermittent supply." This however is highly insanitary, and should be adopted only after all other means have failed. Many large towns have had to resort to an intermittent supply, when increasing the pressure of their water-supplies. Bombay may be mentioned as an instance, but in this city it is recognised as an evil temporary expedient, to be abandoned as soon as possible, and the Corporation is incurring a large expenditure to ensure a constant supply under adequate pressure.

The grave dangers of an intermittent water-supply are not always fully appreciated. They will now be briefly stated, in order that it may be appreciated how important it is that every possible precaution should be taken to insure that recourse to such a supply may not become necessary in any Municipality. The principal evils are three in number:—

1. **NECESSITY FOR STORAGE.**—In order that there may be water for cooking, washing, and other domestic purposes during the hours that water is cut off in the mains, storage cisterns are necessary for houses provided with water services. In practice it is found that such cisterns are never kept properly clean. They provide a home and breeding place for insects, and the resulting organic animal matter will decay and convert a pure water into one that is dangerous for domestic purposes.

Again, however stringent the by-laws, it is impossible altogether to prevent pollution from sewer gas due to improper connections or insufficient protection.

In the case of the poorest houses, where water is obtained from street fountains, it is necessary with an intermittent supply, to store water in chatties and other vessels. This is unsatisfactory for several reasons. In the first place there will not—in such poor houses—be sufficient vessels to provide the quantity of water required for sanitary purposes. In the second place it is very unlikely that the vessels will be thoroughly clean—the deficient water-supply makes it difficult to clean them properly. Lastly the water will have to stand for hours in an impure atmosphere at a high temperature, and is sure to deteriorate in quality.

2. INSPIRATION OF IMPURITIES.—In an intermittent system, during the hours when the water is turned off, taps opened in the lower portions of a district will empty the pipes in higher sections and will create a vacuum which will suck in whatever surrounds the pipes—frequently filthy liquid and foul gas—wherever there is the slightest leak in a pipe, joint, hydrant or other fitting.

This indrawn foul gas or the filthy liquid will be mixed with next day's drinking water ! The writer has noted many such possible—not to say probable—sources of pollution. For flushing side drains, pipes are sometimes provided that are connected directly with the water main at one end, while the other end is an open mouth which dips down into the side drain. When the water-supply fails in this district, the resulting vacuum in the main will produce a sucking action which will draw into the water main, the foul emanations from the side drain, and perhaps—if the side drain is full—some of the sullage water itself. By such means may be introduced into the water system the germs of many of the intestinal diseases which contribute largely to the death-rate of all Indian cities.

Many cases may be seen in Indian towns of water pipes passing unprotected under filthy accumulations of rubbish close to leaky sewers, and through sullage water.

The danger of pollution from such sources is very serious. It is true that they ought not to exist, but in many towns it is impossible to detect all of them and therefore their existence must be treated as a fact, and for this reason every effort should be made, and every precaution should be taken, to insure that all water pipes throughout the city shall be continuously full of water under pressure so that danger of contamination, by the means just described, may be reduced to a minimum, if not eliminated altogether.

3. DANGER OF FIRE.—With an intermittent water-supply the danger from fire will be appreciated as soon as it is mentioned, for a fire is just as likely as not, to occur during a period of intermission in the supply, and in such a case there would be no water available for extinguishing purposes, until the turn-cocks could reach the spot and open the necessary valves.

Methods of discovering Waste and stopping it.

Methods of checking waste other than restricting the hours of supply are :—

- (1) Limiting the number of connections.
- (2) Metering every water service.
- (3) House-to-house inspection.
- (4) Taking up and replacing all pipes and fittings.
- (5) Waste-water meter system.

Dealing with these in order.

One method of checking waste is to limit the number of connections, and there is no doubt that by such means the quantity of water wasted through defective domestic fittings may be considerably reduced.

Limiting the number of connections.

It is generally agreed that it is a good thing to provide bye-laws to limit for any premises the number of connections and taps which may be fixed, and the quantity of water which may be used for “domestic purposes.”

It is doubtful, however, if it would be possible or desirable, to refuse a connection to any puckah house where the owner is willing to pay for it. In many cases the prevalence of gosha habits would be a strong inducement to continue the use of sewage-polluted wells, if water could not be obtained except by going to a public tap. And where such wells are not available, a limitation of tap connections might reduce the use of water to a point below the minimum necessary to insure sanitary conditions.

Metering every water service and charging for the water used, is an excellent way of determining and checking waste. The consumption as measured by the meter indicates to what extent there is waste, and the monthly bill, which depends on the consumption, acts as an automatic check on the waste, for the man who pays the bill will take precautions to prevent the amount being unreasonably great.

This system has been adopted to a considerable extent in America. In large wealthy cities, where the consumption per head is high, it is perhaps the most economical way of limiting waste. It has the further advantage of providing the most equitable basis of charging for water, as each householder pays for the actual quantity consumed in the house.

The weak point of the system is that it takes no cognizance of leakage in the mains: but used in combination with the waste water meter system described below, it forms the most efficient known method of checking leakage and waste. Most Indian cities, however, are not rich enough to warrant the expenditure necessary to meter every connection.

In estimating the amount of this expenditure we may take the average cost of a meter, including meter pit and fixing, at Rs. 100, and assuming 40,000 connections to be made eventually in a town of the size of Madras:—

CAPITAL COST.

Then the first cost would be 40,000 meters

at Rs. 100 ...

... Rs. 40,00,000

ANNUAL EXPENDITURE.

Staff, materials, and replacing worn parts			
of meters, 40,000 meters at Rs. 3	...	Rs.	1,20,000
Interest on Capital, Rs. 40,00,000 at 4 per			
cent.	...	...	1,60,000
Depreciation @ 15 per cent.	...	...	6,00,000
Total Rs.			<u>8,80,000</u>

Under the house service regulations recently passed by the Corporation of Madras, meters will be used only for those houses where a "first-class" service is required. In such cases the house-holders will bear the cost both of installing and of maintaining the meters, so that no burden will be thrown on the general tax-payer.

House-to-house inspection has often been found very effective in reducing the waste of water. Manchester, Glasgow, Newcastle, and Cambridge may be cited as examples of towns where a large reduction in consumption resulted from careful house-to-house inspection. It is however, a very costly method, and its success in Indian towns would depend largely on the honesty of comparatively low-paid inspectors.

Furthermore, it is found that the necessarily frequent entry into houses by Waterworks Inspectors, is objectionable to the inhabitants even in Europe. It would be much more so in India where the caste system and gosha habits play so important a part in domestic economy.

Another fault of the method is that, while a reduction is effected in the waste from cisterns, taps and other fittings inside the house, yet it fails to discover the invisible underground leakage, which occurs in the mains, house pipes and connections.

For these reasons house-to-house inspection alone is not sufficient in Indian cities, but it is a very useful auxiliary, and is now being carried out in certain areas of Madras City.

Where the whole system has failed, the taking up and replacing of all pipes and fittings may be adopted with advantage, and will produce excellent results. Norwich, in England, is a well-known example. In this city the consumption was reduced from 40 to 15 gallons per head per day by taking up nearly all the pipes and fittings and replacing them by others of better quality.

But the cost of this method is very great, and in cities where most of the pipes are believed to be watertight and serviceable, there would be no justification for incurring the great expense. Further, the inconvenience to consumers would not only be very great, but would also be prolonged over the considerable period required to complete the renewal of pipes and fittings.

Again, though an excellent system would be secured with few sources of leakage, yet some plan of maintenance would still have to be devised to ensure the ready detection and remedy of losses due to waste, and to such leaks as would develop in course of time.

In the waste-water meter system the city is divided into districts, and the mains are so arranged that, by closing a few valves, the whole of the water required for any district is supplied through a pipe on which is placed a waste-water meter. This form of meter records continuously the flow of water through it on a diagram attached to a drum which is caused to rotate by means of a clock.

The flow which takes place between midnight and 4 a.m. will be mostly leakage and waste.

The diagrams for the whole city are brought in daily or weekly, as may be thought best, and from them the Engineer is able to see at a glance in which districts water is most wasted, and on these districts is concentrated the energy of the staff.

Having cured the worst areas, the next worst are dealt with, and so on. If the town is completely metered, an efficient watch is kept over all the districts, the changes of pressure due to curing leaks, cause districts to alter in character, and in some districts leakage grows more rapidly than in others. Hence the need for a continuous record.

In order to localise the waste, an Inspector conducts a night inspection. Beginning about midnight, he sounds and closes all stop cocks on the connections, closing the sluice valves on each branch as soon as all the stop-cocks on that branch have been shut down. The time is carefully noted in every case, and, by referring to the recorder diagram, the effect of closing each valve can be ascertained, and the points of leakage located within narrow limits; their positions are determined more exactly by means of stethoscopes.

The premises where excess water is being used are inspected during the next few days, and notice is served to remedy any defects which may be found. If the leakage has been traced to the main or house connection, the road is opened up, and the fault repaired.

The waste-water meter system is very generally used throughout England. The whole of London is now controlled by this system and some 500 other towns in Great Britain have adopted it. Waste-water meters have been introduced into Bombay and Calcutta as the best method of localising leakage and waste, and the system is being extended in both these cities.

The effect in Calcutta has been to reduce the consumption under constant supply from 22,000,000 to 17,000,000 gallons per day, a saving of 5,000,000 gallons per day or nearly 23 per cent.

The result of adopting the system in Bombay is shown by the following extract taken from the Administration Report of the Municipal Commissioner for 1905 :—

“It having been ascertained beyond doubt that a very large quantity of water was leaking from the water mains and

service pipes. it was deemed expedient to increase the staff engaged in this work and form a Special Branch whose duties would consist of the detection of waste and the location of defects upon the water mains, service pipes, fittings, etc. Since the 1st of September, 1904, this system has been followed with considerable success. Many underground leaks and defects, some of a very extensive nature, having been brought to light and repaired: consequently the supply and pressure in several districts has been much improved."

As an example of the application of waste-water meter system, it may be stated that in the scheme prepared for Madras, the city has been divided into 134 districts, each provided with a separate waste-water meter. In addition to the waste-water meters, the city has been divided into 13 bulk meter districts, so that, in ordinary working, when the quantity of water supplied to one of the 13 bulk meter areas is found to be excessive, the sources of waste can be traced by means of the waste-water meter.

In conclusion, it may be stated that water is a valuable commodity, and must be treated as such to derive the full benefits from a pure water-supply. It is just as important to close every water tap as soon as sufficient water has been drawn and stop every leak, as it is to switch off the current in a house supplied with electricity, when the lights and fans are not required.

The Assam Local Self-Government Act, I of 1915 (A. C.).

THE Local Boards in Assam, although they have been in existence for over 30 years, are on no legal basis, being founded on Executive Orders and as such do not come under the definition of "Local Authorities" under the Loans Act and cannot borrow any money for any public purpose. This was recognised as late as 1897 while Sir Henry Cotton was the Chief Commissioner of Assam, who was desirous of

giving them a legal status and vesting them with proper control over public works. But various causes contributed from time to time to stand in the way of legalising the Boards in Assam till Sir Archdale Earle became the Chief Commissioner of the Province after its re-constitution as a separate Administration and the first Act of his Legislative Council is the Local Self-Government Act which was passed in March last, and has since received the assent of the Governor-General.

The Act consists of 98 sections, divided into 11 chapters. It has not accepted the Bengal system of providing for District Boards but the various Local Boards in the District are independent Boards.

Chapter I consists of definitions and contemplates the creation of a new body called "village authority" which is defined to be "a person or body of persons for the time being invested with the control and administration within a village of any matters falling within the purview of the Act."

Chapter II deals with the constitution of Local Boards, one Board being directed to be established in every sub-division, the minimum number of members being 9, and members being partly nominated and partly elected, provided that not more than one-third of the total number of members of any Board shall be salaried servants of the Government and that the number of elected members shall be greater than that of nominated members. The Chief Commissioner is to fix the number of members for each Board, the number to be elected and nominated, respectively, and the distribution of elected members among the different sections of the community and in different localities, and the qualifications of members and of electors, or of any electorate body. The disqualifications of members and of electors are however enumerated in this Chapter and among other things a salaried servant of Government is declared to be ineligible, as also one "who has been declared by the Chief Commissioner to be of such reputation and antecedents that his election would, in the opinion of the Chief Commissioner, be contrary to the public interest."

Section 11 provides that the Chairman of each Board shall be appointed by the Chief Commissioner either by name or by virtue of office and shall be elected where the Chief Commissioner so directs. The Vice-Chairman is always to be elected by the Board and is to be a non-official.

Section 17 provides for the appointment of a Board Engineer or other establishment by two or more Boards conjointly.

The Indian members headed by the Hon'ble Mr. Chanda proposed that (1) a principle should be laid down in the Act for the guidance of the Chief Commissioner in making rules and that, in particular, the distribution of the elected members should as far as possible be on the basis of land revenue and local rates paid, (2) that the qualifications of members and electors should be defined, (3) that the Boards should be divided into two classes, one being empowered to elect their Chairman, the other to have its Chairman nominated, and (4) that the appointment by two or more Boards should be limited to special works. But none of the amendments were accepted, the non-official European members joining the Government and defeating the Indian members who were placed in a standing minority. The amendment about the non-official Chairman was not pressed in the light of the remarks of the Chief Commissioner which showed he would tentatively give the power to elect the Chairman to selected Boards, and if the experiment succeeded, the Act could be amended later so as to bring it into accordance with practice.

Chapter III deals with the constitution of village authorities which were to be established for any village by the Chief Commissioner after consultation with the Local Board and were to consist of a member or a number of members appointed or elected. Mr. Chanda proposed that the member must be more than one and the members should be selected by the village people by some simple process of election. In the course of the discussion an assurance was

given by Government that in the appointment of members an Officer not below the rank of a Sub-Deputy Collector shall make enquiries.

Chapter IV deals with the finance of the Local Boards and provides that the Board shall submit its Budget estimates through the Deputy Commissioner to the Commissioner who will signify to the Board his objections, if any, to the same and the Board will consider the same and may either modify the statement or signify in writing its reasons for adhering to such statement and estimate. The revised statement will then be submitted through the Deputy Commissioner to the Commissioner who may (a) approve of the estimate as it stands or (b) approve of it after making such alterations therein as he may think fit, or (c) return it to the Local Board for any such alterations and when the alterations referred to in clause (c) have been made, the estimates shall be resubmitted to the Commissioner.

Chapter V deals with the finance of the Village authorities, the village fund being made up of all sums contributed to it by the Local Board, Provincial allotments, sums realized as penalty under the Act in the village, sums made over to the fund under the Cattle Trespass Act and the Ferries Act and proceeds of markets.

Chapter VI deals with the powers of Local Boards and by section 37 every Board is empowered, from time to time, with the approval of the Chief Commissioner, to levy a tax on land at rates not exceeding three pies for every rupee of the annual value of such lands to be utilised solely for the following works :—

(a) either singly or in combination with any other Local Board or other Local Authority to construct and maintain within or partly within and partly without its local area, a railway or tramway.

(b) under similar conditions, to construct and maintain a ropeway or other means of transport or a steamer service, or

make contributions thereto, provided that the tax shall not be levied unless the levy thereof is determined by a resolution of the Board supported by not less than three fourths of the members present at a meeting specially convened in that behalf, such resolution being confirmed after a period of six months by a like majority at a like meeting.

This section was strongly opposed by the Indian members, headed by Mr. Chanda who said that the only Province in India which adopted this principle was Madras, where the Boards were empowered to levy this tax in 1884, and after 30 years of working it has not been followed by any other Province, that Bengal Boards without such powers of taxation had constructed more miles of Railway and invested more capital than Madras Boards and that in any case the Local Boards could not levy this tax on permanently settled lands in Sylhet and Goalpara (which comprised more than half of the Province) according to the despatch of Duke of Argyll when sanctioning, as Secretary of State, by his casting-vote, the Bengal Road Cess. The non-official Europeans voted with the Government and all non-official Indian members voted solid for the amendment of Mr. Chanda which was lost by 12 against 10.

The Boards are among other things authorised by this Chapter to have charge of pounds and are charged with and made responsible for the establishment, maintenance, management of all primary and middle vernacular schools under public management within the sub-division and may also provide for the establishment, maintenance, and management of any other schools, or class of schools within the sub-division, or make grants-in-aid of any such schools; the Boards may have the public or charitable dispensaries in the sub-division placed under their charge, and may establish and maintain, within the sub-division, dispensaries, hospitals, asylums and places for the sick or destitute and may with the sanction of the Commissioner contribute towards the cost of such institutions outside the sub-division, maintain vaccinators and

provide for the sanitation and water supply and are empowered to require unwholesome tanks and pools to be cleansed and drained and to require the cleansing of buildings and lands and to take necessary steps for the purpose.

The Boards may be required to appoint Health Officers and Sanitary Inspectors and are given miscellaneous powers to undertake local works likely to promote the health, comfort and convenience of the public.

Chapter VII deals with the duties and powers of village authorities, Local Boards being empowered, subject to the control of the Chief Commissioner, to direct that the matters placed under them in the village be transferred to the control and administration of the village authority and provide adequate funds for the same, and the village authority is empowered to exercise all or such powers as may be delegated to it by the Local Boards.

Chapter VIII provides that, subject to the control of the Chief Commissioner, the Local Board may, by a resolution passed at a special meeting convened for this purpose, adopt special sanitary provisions relating to the sale of food and prescribe a penalty on the lines of section 3 of Bombay Act II of 1899 for selling human food not of the proper nature, substance or quality and empower the Boards to enter and inspect markets, shops &c., and to seize unwholesome articles exposed for sale and to destroy unwholesome articles of food.

Chapter IX deals with control over proceedings of Local Boards, which the Chief Commissioner and, acting under his orders, the Commissioner and Deputy Commissioner may have; the power of control relates to :

- (a) access to all books, proceedings and other records,
- (b) inspection of any immoveable property in the occupation of the Board, or any work in progress under its orders and any institution under the control of any Board or village authority,

(c) the appointment by the Chief Commissioner of an Inspector of Local Boards who shall inspect and advise Boards in regard to all public works, and perform such duties and powers as may be assigned by rules,

(d) the suspension of action of Local Boards and village authorities, if in the opinion of the controlling authority, it is likely to cause injury or annoyance to the public or any body of persons or to lead to a breach of peace.

(e) The Commissioner may direct any Board, where he finds it has defaulted in performing any duty, to do it in a given time and if it is not done to appoint some fit and proper persons to do it and the Deputy Commissioner may in any emergency appoint some fit persons to execute any work or do any act regarding which the Board in his opinion defaulted and shall forthwith report to the Commissioner the circumstance and forward any explanation which the Board may have submitted and the Commissioner may confirm, modify, or rescind any order of the Deputy Commissioner and he in his turn shall submit for the orders of the Chief Commissioner a report of action taken by him.

(f) The Chief Commissioner may, by notification stating the reasons for his order, supersede any Local Board or village authority for a period to be specified in such notification, where it is not competent to perform, or persistently makes default in performing, its duties or exceeds or abuses its powers.

The Chief Commissioner may also withdraw particular powers and privileges delegated to a village authority.

Chapter X deals with rules which the Chief Commissioner and the bye-laws which the Local Boards, may frame for carrying out the provisions of the Act.

Chapter XI deals with miscellaneous matters and provides that members will not be liable for loss, or waste or misapplication of any money or property unless the same is a direct consequence of their neglect or misconduct.

Some Town Planning Principles Restated.*

[BY THOMAS ADAMS, TOWN PLANNING ADVISER TO THE
COMMISSION OF CONSERVATION, CANADA.]

WHAT TOWN PLANNING INCLUDES.—Town or city planning is the application of scientific principles to all matters connected with the town or city. The factors which constitute a city and the order in which they do so are :

1. Industry and external transportation.
2. Healthy living conditions for the citizens.
3. Internal transportation.
4. Markets and food supply.
5. Education.
6. Recreation.
7. Civic centre and monumental buildings.

The first object of the town plan should be to conserve and provide for the extension of its business interests, and to apply healthy conditions to the dwellings of the people. Complementary to both these objects, it is desirable to secure efficiency in transportation and in the supply and distribution of food, etc., and lastly it is needful to give expression to those communal and social interests which are represented in universities, schools, parks, playgrounds, town halls, museums, churches, etc. In this matter we are considering not the ethical importance of these institutions, but their logical order in the planning and building up of the city.

THE OBJECT OF THE TOWN PLAN.—The three things to be aimed at in city planning are convenience, amenity and proper sanitary conditions. Under convenience we include everything that pertains to the efficient discharge of business, its protection and extension, the width and construction of streets, the disposition of railway tracks and economic distribution generally. Under amenity we include light and air

* From the *American City*.

both in factory and home, proper regard for environment, the preservation of valuable physical features which cannot be recreated, such as forest trees, separation of factory from residential areas, regulations of heights of building, etc. In regard to proper sanitary provisions, the first essential in any city is its water-supply, and complementary to that is an efficient system of sewage disposal. That matter affects the city life as a whole, but there are also those methods which can only be secured by proper action on the part of the individual citizen. In that respect we have to regulate the collection of the garbage and the cleaning up of backyards, etc. There is, of course, a certain overlapping in regard to these three objects, but they may be roughly classified as above. The heights of buildings, for instance, require to be regulated in relation to the traffic of the city—i.e., for convenience and economy—as well as for the purpose of amenity.

CONVENIENCE AND SANITATION.—The functions of the engineer and his architect have to be more carefully considered than hitherto in regard to the town plan. In connection with convenience, we require the engineer to consider highways from the point of view of their planning and direction, as well as from the point of view of their construction. The lines, widths and direction of the main arterial roads are among the most important things to be considered in the planning of a city. The relation of these to the secondary streets of the town and the relation of both to the system of sewerage and water-supply distribution are matters in regard to which he is the proper adviser. He it is, also, who has to consider questions of transportation by rail and waterway, and the location and planning of factory areas in relation to the railway and waterway system. It is obvious, of course, that he is the man to deal with the sewerage and water-supply systems as a whole, so far as planning and construction are concerned.

The architect comes in in regard to these matters, to deal with the hygienic conditions in the factory and the home, the grouping and setting out of buildings in relation to the street,

and necessarily in regard to all matters of architectural design as far as these affect convenience and sanitation. The architect should co-operate with the engineer in the planning which relates to these matters. The medical officer has his function to perform in criticising and correcting the work of the engineer so as to secure adequate protection for public health. All these professions have their interest in the part of the city plan which relates to convenience and sanitation, but the proper order in which they should advise is engineer, architect and medical officer. Mistakes are being made every day because we do not recognize this order.

AMENITY.—In regard to amenity we include the matters which almost entirely come within the domain of the architect, including the landscape architect, although in this regard it is the duty of the engineer to co-operate with the architect. The architect has to consider the height and character of buildings, the preservation of natural features, the position and lay out of parks and play-grounds, the open spaces around dwellings and factories, the disposition and grouping of civic centres and public buildings.

COOPERATION AND FINANCE.—I have referred to the necessity for co-operation between the architect and engineer. It is also necessary in connection with town planning to have co-operation between different municipalities and between municipalities and owners. Here comes in the work of administrator. We have to look to him for considerations of finance. For instance, there is the important question of spreading the cost of a scheme over a period of time so as to secure that the present generation will not pay for the benefits which will accrue to posterity, but that there shall be an even distribution of cost in proportion to benefit received. Secondly, there is the question of adjusting the cost and method of development to the character of buildings to be erected. Streets serving industrial areas should be of different construction from the streets serving residential areas, and the latter streets should be of less width than the main thoroughfares.

The lawyer has also an important part to play in the preparation of town-planning schemes, although his position is frequently disregarded until the effect of his advice is that the propositions of the architect and engineer are impracticable. As a matter of fact, the framing of the provisions of the scheme, their adjustment to legal conditions, the extent to which they are practical under existing law, etc., are vital considerations in connection with the preparation of town plans. That is why, in proper town-planning, legislation is necessary as a preliminary to the preparation of town-planning schemes. An engineer and an architect may visualize a fine scheme for laying out a city; it may be based on sound principles; it may be perfect from the public point of view; but what value is it if there is no machinery for carrying it out, and no means of giving its principles effect unless at prohibitive cost to the community? Before we can get effective town-planning, therefore, we have to have the co-operation of the best skill which can be brought to bear upon it by the engineer, the architect and the lawyer, and each has an important function to perform throughout all stages of its preparation.

WHAT A TOWN PLANNING SCHEME IS.—This will be realized all the more with regard to the fact that a town-planning scheme does not deal alone with the beautification of a city, but enters into the root questions of its economic and engineering development. Town-planning schemes in Britain, such as those of Birmingham and Ruislip, include provisions with regard to the laying out of new streets, widening existing streets, adjusting street boundaries, relaxing local by-laws, submission of estate sub-divisions for municipal approval, modification of plan as circumstances change, appropriation of land for specific purposes, fixing of building lines, determination of proportion of building land which should be covered with buildings, limitation of heights of buildings, fixing a maximum number of buildings to each acre, fixing of zones for industrial and residential purposes, prevention of nuisances,

etc., and including the important questions of compensation for injury caused to property and of recovery of betterment caused by the scheme.

We see at once how necessary it is to have proper powers to initiate and carry out a scheme both for the protection of the municipality and for the purpose of securing equity to the owners of land. It has been suggested that in these matters land-owners in Britain are willing to submit to restrictions which would not be acceptable to land-owners in America. I think that is because we do not understand the extent to which land-owners as a whole in a city will co-operate in securing right conditions when the restrictions affect them as a whole and not individually. Moreover, in America many of the larger owners of real estate have themselves begun to voluntarily apply restrictions and to carry out what we call private town-planning schemes. Much of what is suggested is to the effect that principles which owners of real estate find beneficial to their own interest when applied to their estates should be made of general application, and should be extended to areas which are used for housing the poor as well as to those which are used for housing the well-to-do.

While the importance of legislation has to be emphasized, there is much that can be done by municipalities while waiting for it. Topographical maps of all cities require to be prepared. These maps should include details of the buildings already erected, the distribution of population, and of traffic conditions. In San Francisco it is estimated that \$26,000,000 was the cost of improvements which might have been avoided if the city planning had been adjusted to the topography. There is need for more investigation of existing conditions in regard to traffic distribution, factory and residential location, lay-out of railway stations and harbour fronts and the inter-relation of these. Town-planning for the future is cheaper than replanning areas which have already been developed, and has not the same injurious result on property.

It has been proved that with healthy conditions the mortality in the city need not be higher than that in the country. There is a great cry of taking people back to the land. So far as that is practicable, it is desirable to encourage it, but it is well known that in every civilized country cities are growing, and there are few who will venture the opinion that they are likely to cease to grow in the future. We have to try to bring more land to the people as well as to take the people to the land.

IS TOWN PLANNING A FAD.—There are men who think interference with what they call natural growth and any kind of originality is a sin. To them town-planning, and even projects for improvement of housing conditions, are visionary; they look to individual regeneration for all measures of reform. Those men are unsound in their judgment because they fail to appreciate the fact that the city and homes that constitute part of the city are artificial creations, and that in all things artificial we have to improve as we progress and regulate as we grow.

There are others who think that all things fanciful and picturesque are fads, therefore town-planning is a fad. This is because they may have failed to inquire what town-planning is or have been misled as to its meaning.

The frequent assumption that town-planning relates only to the æsthetic side of city life and does not enter directly into its business, its ethical and its public health conditions, is responsible for this error. It is desirable that citizens should aim at making their city beautiful, that they should endeavour to give expression in fine buildings and streets to their civic ideals, but these things, after all, are only the coping stones of the city structure, of which the foundation is the efficient workshop and the healthy home.

TOWN PLANNING AND GROWTH.—We see, then, how broad-based town-planning is. We see also that the improvement of housing and sanitary conditions is not detached from town-planning, but is an essential part of it.

The proper time to plan existing cities as a whole has passed but we can plan the portion that is likely to be built upon in the next forty or fifty years. Up to the present most cities have been developed any how. When Dr. Brown asked the little girl "Who made you?" she said, "God made me so far," indicating her baby stature, "and I grew the rest myself." The same may be said of many of our American cities. They have been endowed by Providence with beautiful sites and might be said to have grown the rest themselves. But the analogy is imperfect—for the child, like all natural things, but unlike the city, was the conscious design of its Maker, fashioned so as to grow up in symmetry and to develop along certain decreed lines. Some folks say that a city must be allowed to grow and you cannot control its growth: but cities are not really growths at all, for proper growth follows the lines of some plan; witness the tree or the child in nature. What our cities really do is to expand or bulge out by accretion.

TOWN PLANNING AND HOUSING.—In Britain we have found from long experience that it is futile to destroy slums unless you find some means to re-house those who now live in them. In both Britain and America the evil has become too deeply rooted to be remedied by mere regulation.

It may be claimed that those who live in slums do not want better conditions, but in practice it is found that improved environment converts the men and women of the slum into decent and responsible citizens.

When we allow a slum race to be created in our midst, we cannot expect to reform them suddenly merely by altering their conditions. Nature demands compensation for any lack of foresight and indifference in the past; and when once people become habituated to slums, we have to allow time for them to improve. The State must take a share of the responsibility during the period of transition. Socialism or not, it is the duty of the State to help to heal the sores it has allowed to

be made in the body-politic; national money, advice and supervision are essential. It is true that in sanitary matters much is due to individual irresponsibility and ignorance. A Scotch minister once asked his man John if it would not be better for him to give up drinking liquor. "Do you nicht take a drappie yourself, minister?" asks John. "Yes, but circumstances differ." "Very true, sir," says John, "but can you tell me how the streets of Jerusalem were kept so clean?" "No, John," "Well, sir, it was just because everyone kept his own door clean."

No doubt much of the trouble of street and backyard cleaning could be improved by individual care, and more regulation is needed in these respects. But apart from sanitary matters the individual has little power and no responsibility. We must accept the fact that the responsibility for planning our cities, for improving housing conditions and removing the slums rests with the governing authorities and the business men of our cities. We have to pay for past neglect even if in doing so we have to sacrifice some of our theories regarding individual liberty and what we call the functions of government.

Making Civic Surveys Graphic.

[ABSTRACT OF TALK BY ARTHUR C. COMEY,

MEMBER, MASSACHUSETTS HOMESTEAD COMMISSION.]

THE Civic survey is the collection and compilation of all information concerning the city or town which bears upon its physical, social, economic or financial condition. Such a survey is justified as furnishing the only reliable basis for planning its development and improvement.

The local planning board in collecting such information will constitute a bureau of research, to which all other departments and all citizens may come for information. No two cities or towns are alike; therefore a discussion such as this

must be made all-inclusive, with many items which do not apply to the smaller cities and towns. It is, however, obvious that most of the conditions are common or similar in many of the fifty-three Massachusetts Municipalities with a population of ten thousand or over.

It will obviously be impossible to acquire in a short period all the data which would be of value, but the survey should be gradually broadened and added to and brought up to date whenever opportunity offers. Material on file should include, in addition to the original data compiled by the board, maps and atlases of different periods, reports of city departments, commissions, and civic organizations, photographs and prints, books and clippings, particularly of city planning projects. A bibliography and classified card index should be made of all data of value and material on file or available for consultation elsewhere.

Statistics are much increased in usefulness if shown graphically on maps and diagrams. Such graphic maps should show distribution, density, etc. Data should when practicable be by districts or blocks. The region covered by these surveys should include the vicinity of the city tributary to it, but statistics should in all cases be kept for the city proper as well and many items will apply to it alone. Much of this information is collected and may be compiled from the Census Reports and similar sources, as well as surveys made by various private organizations. In presenting the maps, different shadings or symbols should be used for each element, making plans suitable for reproduction in black and white, but at the same time adapted for coloring to emphasize certain facts. Standard methods will from time to time be suggested by the Massachusetts Homestead Commission. Statistics and graphical maps should be compiled periodically, annually if practicable. Historical facts should be noted and data should be filed for previous decades, and changes shown, thus indicating trend.

Topography.

Each city should aim at a complete series of topographic maps. With these as a basis, any problem under consideration may at once be studied and its relation to other problems be kept in view. In addition to recent maps, a collection of earlier maps should also be made for comparison. In general, certain standard sizes and scales should be used so that maps of adjacent cities and towns may be used together. No map should exceed $36'' \times 48''$, over all, in size, in order to permit filing flat in drawers or vertical files. Scales should, when practicable, be :—5 miles=1", 1 mile=1", 1000'=1", 200'=1", and special maps at 100', 50', and 20'=1".

All maps should be referenced in to the geodetic base of the state triangulation system. The latitude and longitude of each triangulation point and each city and town bound is given to the nearest hundredth of a second in the Boundary Survey Atlas, prepared and sold by the Massachusetts Harbor and Land Commission, at \$2.50 per volume, copies of which are on file with the city clerk of each city and select men of towns. For the local topography a system of plane co-ordinates should be used, designating either some central point, preferably a triangulation point, as 0 ft. long. and 0 ft. lat., or else the extreme west point of the city as 0 ft. long. and the extreme southern point as 0 ft. lat. Unless some other base is in general use, elevations should be referred to mean low water, sea level datum.

Among the social, economic and financial conditions which may readily be indicated by graphic maps the most important are :—

1. Areas and zones, and the development of private property. The map should show areas in streets, other public property, quasi-public buildings, railroad, industrial, commercial, tenement, other residential, rural and unoccupied property and waste land

2. Range in land values.
 3. Distribution of sleeping population. Map should show density per acre.
 4. Increase in population. Diagram should show curve.
 5. Character of dwellings. Map should show each one family, two family and tenement house, rooming-house, and hotel, differentiating between detached, semi-detached and in rows; another map should show number of stories, character of exterior, etc.
 6. Working population. Map should show density per acre.
 7. Health conditions. Map should show location of cases of death and various sicknesses, and relative rates in different districts.
 8. Effective radius of schools and parks. Maps should show home of each one attending, with circles to indicate area served.
 9. Social agencies. Map should show location.
 10. Thoroughfares. Map should show principal routes out of and around the city.
 11. Pavements. Map should show location of each type.
 12. Flow of traffic. Map should show by bands varying in width according to volume both street and transit traffic.
 13. Transit diagrams. Relation of cost, schedules, crowding, fares, etc., should be shown.
 14. Financial diagram. Size of circles should represent total valuation, taxes, revenues, expenditures and indebtedness. Segments in each circle should represent the proportion in various classes.
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The Prevention of Odours at City Refuse Disposal Works.*

[BY RUDOLPH HERING, D.Sc.]

CITY refuse when delivered at the disposal plant may cause, in its raw state, offensive odours, chiefly after the beginning of the putrefaction of some of its parts. The odours to be discussed in this paper relate only to those which are associated with the final disposal of refuse.

The different parts of a city's refuse are enumerated as follows: Garbage, dead animals, night soil, stable manure, street sweepings, ashes and rubbish.

All of these parts can be treated and finally disposed of by incineration. Garbage and dead animals can be treated by their reduction to grease and fertilizer. Or garbage, dead animals, night-soil and manure can be buried as a final disposition. Manure, street sweepings, ashes and rubbish can sometimes be satisfactorily disposed of by dumping, and garbage sometimes as food for pigs.

The odours which may arise in connection with these various methods of treatment may be classed in two groups:

First. Odours from the escape of pure gases which are soon converted into other gases that are not offensive. For instance, sulphurated hydrogen persists in an offensive condition so long as it is concentrated or not decomposed, but when diluted in a sufficient quantity of air it is altered into other inoffensive compounds.

The general remedy for eliminating such odours, therefore, is either the discharge of the gases into an air current sufficiently great to get a quick dispersion and dilution, or the passage through a medium which produces a chemical destruction by fire, or through a disinfecting chamber or by a dispersion into and a dilution by a sufficiently ample current of water. A disappearance of odorous gases by dilution in the atmosphere is generally quite rapid.

* From a paper read before the Sanitary Engineering Section of the Amer. P. H. Association.

Second. The odours from vapors which are the gaseous forms of substances which normally exist either in liquid or solid form, and which, in the case of an incinerator, are frequently accompanied by extremely minute particles of solid matter or dust. For instance, we may refer to the odours from the vapors and dust particles which arise from a chimney and persist until so diluted that the odour from them has become unnoticeable. Their disappearance by decomposition in the atmosphere, if it takes place at all, is extremely slow.

The remedy is substantially as above, namely, a quick discharge and dispersion in a sufficiently large air current if in an open country, or a passage through fire or through a disinfecting air chamber, or by dispersion and dilution in a sufficiently large current of water.

For the prevention of odours it is of first importance that all solids or liquids causing them are removed as quickly and as thoroughly as is financially practicable. It is further important that the odorous gases and vapors be removed by natural or artificial ventilation, with the aid of furnace heat, blowers or air jets, or by a discharge into the atmosphere in a manner to effect a thorough dispersion and dilution.

Ordinary ventilation does not remove the vapors which are held at solid surfaces by absorption. A jet of compressed air frequently played against the interior surfaces of the buildings and against the clothing of attendants will remove this cause of odour.

Odorous solids and liquids, from which the molecules carrying the odour are detached and rise up into the air, should not be long exposed about the works. Special care should be taken, when the atmosphere is moist and warm, to suppress the odours about the works, because under this condition our old factories are most sensitive to odours. The tiring of the sensation of smell when continually active forms some excuse for neglecting to keep the plants wholly inoffensive. It would be well, therefore, to establish reasonable rules, so as to

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control the suppression of odours and to enforce the rules even if men about the plants do not feel the necessity thereof.

It is most convenient now to discuss the odours as they relate to each of the above enumerated parts of a city's refuse, and in doing this I shall adopt the reverse order which was given above.

FEEDING TO PIGS.—Feeding garbage to pigs should be prohibited unless the garbage is delivered fairly fresh and without offensive odours. No decomposition sufficient to produce putrefaction of any part of the garbage should be allowed to have taken place. Slight odours of kitchen waste, such as we perceive at the collection can, are neither injurious nor objectionable, nor can there be objection to the odours of the first decomposition perceived when parts of the garbage have turned sour. Unless fed before putrefaction has begun, garbage should be disposed of in other ways.

DUMPING.—In order to discuss odours arising from the dumping of stable manure, street sweepings and ashes, we should discriminate between the several parts.

Stable manure, if put on fields and utilized or dumped on vacant grounds, may cause the familiar odour which, according to the locality, may or may not be objectionable. In the former case, dumping should not be continued and old manure dumps should be completely covered with a few inches of ashes or earth.

Street sweepings, if dumped on vacant ground, should also be treated in this same manner, although the odours are generally not objectionable.

Ashes do not have offensive odours, but cause objection only from the dust which is raised by dumping and by winds.

BURIAL.—Burial of garbage, dead animals, night-soil and manure, is an efficient method of at once preventing all offensive odours. It is the oldest and most common method used for disposing of all such organic waste matter as cannot be more profitably treated in other ways.

REDUCTION.—Reduction of garbage and dead animals is practised in many large cities. Of all treatments this one has produced the most objectionable odours, although it is neither difficult nor very expensive to prevent them.

These objectionable odours are due partly to the delivered garbage when it is temporarily stored at the plant until treated, partly to the fumes produced during the treatment, partly to the exposed tankage and partly to the exposed liquids discharged from the digesters and grease-separating tanks.

To prevent the creation and maintenance of these objectionable odours, the works should first be kept scrupulously clean. The operation should then be so arranged that the freshly delivered garbage can be placed into the digesters within a very short time, and best at once, and not be exposed in the open until it gets foul.

The gases and vapors arising in an ascending air current from the digesters, as well as from the presses, naphtha tanks, and wherever odours from the cooked garbage may be generated, should be caught in hoods closely placed, of sufficient size and proper shape, and discharging into pipes of diameters properly proportioned to carry away the respective amounts of odorous air ascending from each hood. The draft into the hoods and the circulation in the pipes is best effected by a blower of ample capacity.

The odorous air thus collected from all places where it is formed should be delivered at the best place for treatment. This place is generally below the grates of the furnaces connected with the operation of the works, where it can be passed through the fires by forced draft and be thoroughly purified by intense heat. If the quantity of this air is too great for serving the regular furnaces, an additional special furnace may be built to cremate the excess in quantity, as the complete destruction of the causes of all this odorous air is important. Or the objectionable air may be discharged into the rear pass of the boilers, which may sufficiently eliminate

the odours. Practically all the objections that have been made to the installation of garbage reduction works have been caused by the foul odours frequently emanating from them.

Another method of purifying this odorous air is by passing it through a disinfecting chamber, which method, however, is generally less efficient and more costly.

A noticeable improvement is often gained by making use of a compressed air jet to ærate occasionally the interior walls of the building in which garbage reduction is effected and the surfaces of all apparatus within the same, and even the clothing of the attendants, which has been known to retain the odour for hours.

The foul liquids from such plants should at once be discharged into and carried away by a sewer pipe and disposed of as sewage.

INCINERATION.—Incineration can dispose of all classes of city refuse without exception. It is a method by which all classes when thoroughly mixed can have the odours of all parts completely destroyed, which may otherwise create a nuisance.

To accomplish this end, it is necessary to incinerate the refuse at a high temperature, nominally at least 1250° F., so as to guarantee the sufficient combustion of all organic matter and thereby to remove all sources of odour. Burning at a low temperature is apt to leave some of the organic matter only partly destroyed, and in this incompletely destroyed condition some of it emits a strong, pungent odour.

To guarantee the prevention of a nuisance from refuse incinerators it is, therefore, necessary to have high temperature furnaces, which allow of the escape from the stack chiefly of carbon dioxide, if the combustion is complete, and monoxide if it is less so, but sufficient to prevent offence.

When the combustion is perfect, there is no visible discharge from the stack. When smoke is seen to escape, it

furnishes evidence that unburnt matter may also be discharged. Most of this matter will be organic, because of its lightness, and it is probable that it will have an offensive odour which can be perceived where the fumes strike the ground or a window. This fact has caused frequent complaints to be lodged from inhabited areas to which these fumes have drifted. Minute and even invisible particles of solid and partly burnt organic matter are quickly dissolved and decomposed in the air, as is the case with gases. They drift and may travel a long distance as invisible clouds.

A pungent burnt garbage odour was recognized by myself on one occasion at a distance of over a mile from the stack discharging objectionable smoke, with a very faint wind blowing from the stack to the point of observation.

In order to successfully incinerate refuse in high temperature furnaces, so that no odorous smoke will escape, it is necessary to use forced draft and to regulate the fires carefully and intelligently so that the combustion is at all times perfect and that no odorous smoke will escape.

To prevent odours about the plant, no garbage should be stored longer than a day before it is incinerated, although an offence from mixed refuse does not arise as soon as from garbage alone as generally delivered at a reduction plant. It is generally wise to arrange hoods and ventilating pipes in the furnace building to receive and carry the air, which may have become somewhat foul from contact with the refuse, to blow the furnace grates and use with forced draft, so that the intense heat of the fire will thoroughly purify it.

As at reduction works, it is advisable to keep incinerating works scrupulously clean. No refuse should be left scattered about. Dust from the final clinker and ashes should be properly controlled and the floors of the buildings should be swept or washed daily. The walls of the buildings, the tools, clothing, etc., should be given, as often as found desirable, a blast from nozzles supplied with compressed air.

Attention to the above-mentioned facts and to the conclusions drawn therefrom should prevent all offensive odours at refuse works, whichever of the best methods of disposal may be employed.

Local and Municipal Administration during 1913-14.

[Bihar and Orissa.]

NO noteworthy advance would appear to have been made in respect of the working of the fifty-one municipalities in this Province during the year 1913-14, except in the strengthening of their resources by large Provincial grants. Excluding the opening balance and the receipts under "Extraordinary and debt", the income rose from Rs. 22 lakhs to Rs. 37.5 lakhs, the bulk of the increase having resulted from contribution from Provincial Funds which rose from Rs. 5 lakhs to Rs. 20 lakhs. The Municipality of Patna had secured the bulk of this money (6.5 lakhs) principally for its water-works scheme. It should also be said that, as disclosed by the condition of the closing balances, many of these Councils were unable to utilise even a decent proportion of these doles, a vital defect in municipal management which rightly or wrongly leaves an unfavourable impression on the Government who feel disinclined to make further grants on subsequent occasions to such Councils. Much activity is being displayed by Councils in Tirhut division in repairing old and constructing new wells. But the smaller municipalities would appear to be less zealous in this direction. Evidently they have been asked to say what portion of the expenditure in this direction they were prepared to meet and the response has not been encouraging. For, the Government say: "It is not yet possible to say to what extent this provision (Rs. 1 lakh) will be utilised, but it appears likely that the response of the local bodies to the overtures of Government will be extremely disappointing and that they will lose a chance, which will not probably occur again for some years, of obtaining

a pure water supply at a small cost." In two matters the Government have made statements which need careful consideration by the Municipal Councils. The first is about the haphazard method of carrying out sanitary improvements which, in the long run, prove more costly. The necessity for a carefully prepared programme, to be executed in the order of importance and as funds permit, is a desideratum of the first importance. Sanitary Officers' help could be invited in the preparation of such schemes, and, as the Government rightly point out, "on the occasion of their annual visits, they would be able to offer detailed criticism on the way in which this programme was being carried out instead of confining themselves to criticisms of a more or less general character which not infrequently merely dishearten the Municipalities concerned." Sympathetic guidance from the central Secretariat could achieve remarkable results in this direction. The other point is as regards the insufficient outlay on primary education by Municipalities. It is stated that since the orders requiring every Municipality to devote 3·2 per cent of its income to this purpose were withdrawn, the expenditure has fallen below this standard in no less than 34 Municipalities. Very good results have been obtained in Bombay from a rule of the kind which, it is believed, is still in force there. Ordinarily, the Councils should not be subjected to detailed instructions as to expenditure, but there are certain general principles which should be followed, lapse from which ought to be exposed. The Government, it is to be noted, have clearly stated that if the Councils do not bestow increased attention on this matter and provide adequate sums for expenditure on primary education, they shall have to consider the question of presenting a minimum of expenditure on this object.

There are some striking features in the report of the working of the 18 District and 41 (an increase of 1) Taluk Boards in Bihar and Orissa. The elective system is in force in that Province in regard to local boards, it having been introduced, during the year, in the only two districts

which had not the benefit of it. It is stated that in one of these districts, the election did not excite interest among the people: but the inference drawn from it that the people in the district were not yet ripe for this form of representation seems hardly warranted. It is too soon to pass an opinion, the system having been in force for barely a year, and the reason may partly be that, as officially admitted in regard to certain other places in the Province, the responsibility entrusted to these bodies is of such a meagre character that elections fail to attract notice. The system of Union Committees is making slow progress, for there are only nine of them, unlike Madras where it has been developed considerably. It is stated that the imposition of the tax for sanitary purposes was opposed in certain places. But if the people are properly educated as to the benefits of such taxation and convinced that their villages would not stand to suffer by any subsequent distribution of the proceeds, the opposition will naturally cease after some time. It would appear that local officers in many districts have evinced little interest in the institution of Union Committees and His Honour the Lieutenant-Governor has therefore specially drawn their attention to the matter. But the Royal Commission on Decentralisation had recommended that, with the institution of village panchayats, these Union Committees, in Madras and Bengal should go. No reference, however, is made to this aspect of the question. The dominating feature of the year was the surrender to District Boards of the Public Works cess which increased their income by Rs. 24.6 lakhs, making the total income from Provincial rates Rs. 48 lakhs. It need hardly be stated that this substantial addition has made it possible for District Boards to effect improvements which, before, were entirely beyond their resources. The Government, in view of this, have imposed a minimum standard of expenditure on education and sanitation as a condition to the surrender of the Public Works cess. In regard to education, this minimum was fixed at the amount actually spent on education in 1911-12 plus 10 per cent of the

new grant then made in lieu of the cess. In regard to medicine and sanitation, the minimum was the actual expenditure in 1911-12 plus 15 per cent of the new grant. In regard to the former, four boards and in regard to the latter none reached this standard; this is mostly due to the fact that orders prescribing the ratio were passed only in the middle of the year under consideration. But the Boards, with the increasing interest shown by the public on these matters, might well be expected to pay adequate attention to the desires of the Government and the necessities of the local situation. The Government have also specifically drawn the attention of the local bodies to the very inadequate provision of medical relief in rural areas which are remote from dispensaries. They also say that the amendment of the Local Self-Government Act, with a view to widening the sphere of activities of these Boards and enlarging their powers in various directions in which they are under the existing law unable to incur expenditure is now engaging their attention. We hope that a spirit of liberality and profound faith in the principles underlying local self-government will inspire them in the contemplated legislation.

Public Health Administration in Amritsar.

WE have been favoured with a copy of the Annual Report of the Health Officer of the Amritsar Municipality for the calendar year 1914, which we have perused with much interest. The report is a record of progress in several directions in spite of the fact that the resources of the department have been sorely strained by a severe prevalence of cholera during the year. The Municipality has a population of 151,339 living in 27,384 houses, and the average density of population is 180 per acre. The maximum density

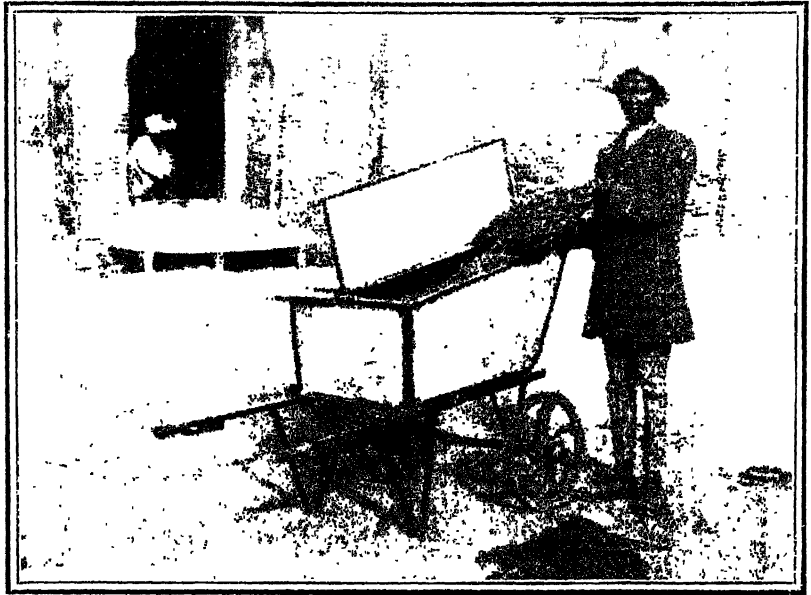
is not given. This would have been interesting, more especially as the Health Officer, Dr. Rozdon, refers in the body of the report to the terrible over-crowding and congestion that exist in certain parts of the town. As every Indian town has its large garden houses occupied mostly by the European and the well-to-do Indian population and as the average density of the population in any town would vary according to the number of these, it is not so much the average density as the maximum density that is of real interest.

The report opens with a statement of the births and deaths during the year, both of which have been high as compared with the previous year. Still births are included under births and deaths. We believe a more correct system is to exclude them from both. While the increase in the birth rate during the year was only 0·2 per mille of the population, the increase in the death rate was 4·49 per mille, due entirely to a severe outbreak of cholera which carried off 747 victims.

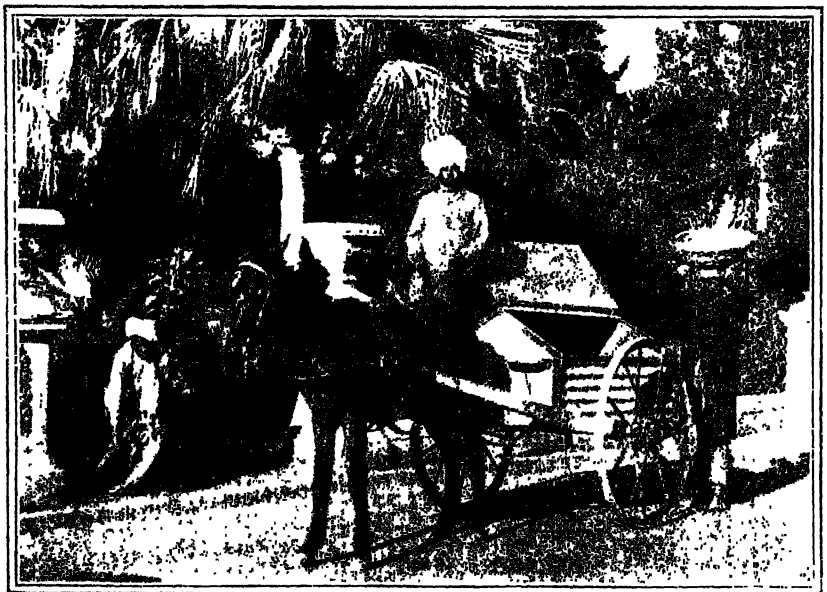
The report gives at length the measures taken to combat the severe outbreak of cholera which prevailed in an epidemic form in the town from July to September. In addition to the disinfection of infected houses, as many as 823 wells were cleaned and 435 pounds of permanganate was used in Hankinising wells. Plague, small-pox, measles and malaria have also to some extent prevailed in the town during the year and the measures taken to prevent the spread of these diseases are recorded in the report.

The Health Officer rightly pleads for special legislation to deal with the adulteration of food and drugs. This is a matter of urgent necessity in this country especially in the larger towns which have the staff and the equipment for dealing with it.

Considerable progress has apparently been made in the conservancy of the town during the year by the employment, under orders of Government, of a trained staff of Sanitary Inspectors. A new pattern of conservancy hand-cart having



Amritsar Conservancy Hand Cart covered; roller bearing wheels; cover can easily be removed from the body of the cart. Weight of unloaded cart: 2 mds. 20 srs.
Weight of loaded cart: about 4 mds. 10 srs.



Conservancy Mule Cart, Amritsar. Weight of unloaded cart: 10 mds. 20 srs. Weight of loaded cart: about 27 mds. Covers open sideways.

roller bearing wheels, has been introduced and it is reported to be of great use in removing sweepings, hidden from public view.

A list of sanitary works undertaken during the year is given towards the end of the report. The report is interesting and is on the whole a record of fair progress, and we congratulate Dr. Rozdon on his good work.

The Bangalore City Municipal Exhibition.

[BY D. B. RAMACHANDRA MUDALIAR.]

THE rapid expansion of the City of Bangalore is an indication not only of its present prosperity but also of its future developments. The concomitant growth of its commercial and industrial activities naturally suggested the need for an annual exhibition. In Bangalore we have been having every year Market and Horticultural Shows, which last but for a few hours. They do not, however, cater to all kinds of industrial and commercial tastes, nor do they provide for all classes of citizens visiting them. The Bangalore City Municipality therefore decided to open an exhibition on a more extensive scale under its auspices, and accordingly approached the Government for permission, which was readily accorded. The Municipality then set to work at once under the able and tactful direction of Dewan Bahadur Rajasabha Bhushana K. P. Puttanna Chetty, the Honorary President.

The Exhibition was held from the 29th March to 5th April 1915, both days inclusive, in the spacious grounds of the Cubbon Park. The picturesque avenue between the flight of steps from the terrace of the Cubbon Statue and the Museum approach rendered the scene very enjoyable.

The Opening Ceremony was performed by our esteemed and popular Dewan Saheb Sir M. Visvesvaraya, B.A., C.I.E., who, amidst his multifarious duties, kindly consented to

discharge the pleasant function. His opening speech was so pregnant with words of encouragement that no apology is needed for quoting a few of his words here :

"The Exhibition serves a three-fold object. The Municipality merely wanted the permission of the Government to hold the Exhibition and they have not asked for any Government aid. It is gratifying to learn that the undertaking will prove a success financially and that the net proceeds will be handed over to the City Branch of the St. John Ambulance Association. Having regard to the colossal sacrifices which the Empire as a whole is making, such sacrifices small or large, to provide relief and conveniences to the sick and wounded, should receive the enthusiastic support of every loyal citizen. You will agree that no worthier object could have been thought of.

"It is only thus come when large undertakings have to be accomplished by the collective efforts of large numbers of people. The country is in need of such service and every citizen should give a portion of his time, money or resources to public work according to his opportunities. He owes it to the community and the State. The community benefits by such work, and the giver also indirectly. It is the willingness and the capacity to work in this way for inferior as well as distant objects that differentiate an advanced community from one whose organising powers are still primitive.

"Mr. Paranna Chetty held high office and by his labours in civic and industrial matters since his retirement, he has set a noble example of unselfish work, which is much valued both by Government and the people and is destined to leave a lasting mark on the public life of Mysore".

"I hope all the anticipations which the organisers of this exhibition have in view may be realised and their efforts may result in a handsome surplus which is needed for a very worthy cause".

In the Industrial section besides the numerous local exhibits of all classes of industry and commerce, there were several goods from Madras, Kumbakonam, Tanjore, Trichinopoly, Negapatnam, Udipi, Umbala, Mangalore, Poona, Mysore, Melkote and Channapatna. The selection of the several shows, the location of the several stalls and the general arrangement were all made with taste and skill. Among the specially

interesting items may be mentioned—the raw materials and the several stages and the process of the paper manufacture, which were exhibited by a science graduate of Bombay. Here one could see how the great resources of Mysore could be utilised in this direction.

The next important item represented the Sericultural industry, wherein the new methods of rearing and preserving the worms and the cacoons were shown.

There was also a picture gallery which contained some exquisite specimens. It is needless to point out here that a new interest has been awakened in this fine art, which was gradually dying in India.

No doubt agricultural exhibits have generally formed the largest section in all Indian Exhibitions of this kind, and this show has not been an exception to this rule. But in Bangalore there is a peculiar interest attached to this event, inasmuch as the first batch of agricultural students who passed out this year from the Agricultural School contributed to its success by making their section specially interesting to the ryot population.

The exhibits from the Forest Department, the products of the Bangalore Jail Manufactory, such as carpets and wooden furniture and rattan works, the demonstration of the Government Weaving Factory, Bangalore, the display of the Co-operative Weaving Factory, Bangalore, together with products, the local made woolen goods, coffee, ink and perfumery, the Mangalore-made biscuits and the rich clothes were all worthy of praise.

The yarn and leather goods, the iron safes, the brick and tile works, the well-finished wooden toys, and the fascinating lace and silk sadies were also prominent among the exhibits.

The Indian and the European communities of the City and the Civil and Military Station co-operated with great enthusiasm. Thus the exhibition was visited by about 20,000 people.

The exhibition has fortunately furnished an occasion for Indian ladies to visit in larger numbers. There was as large a gathering of ladies as of gentlemen, which marks a decided step in the social advancement in our country.

The organisers could not forget in the midst of their exhibition the sufferings of those that are fighting in the cause of righteousness in Europe, and accordingly they handed over an appreciable surplus out of the proceeds to the St. John Ambulance Association, City Branch, for the relief of the sick and wounded Indian troops.

Removal of Persons suffering from Dangerous or Infectious Diseases.

ONE of the difficulties which Municipal authorities have always felt is with regard to persons suffering from loathsome and infectious diseases. No doubt the Penal Code provides a remedy; but a prosecution is not a desirable remedy in this class of cases. One would rather prefer that there should be powers to remove such persons to the Municipal or other hospital. At a recent meeting of the General Committee of the Calcutta Corporation the following discussion took place:—

Dr. Dutt said he had seen a young boy at the corner of Beneatoola Lane and Harrison Road, covered with smallpox eruptions and he had mentioned the matter to the Police constables in the vicinity, but they would not remove him. He would like to know what provisions there were for such cases.

Mr. A. C. Banerjea said that the boy could be prosecuted but without his consent they could not remove him to hospital. The Chairman said he wished something could be done. All it was possible to do was to arrest him and charge

him with negligently or maliciously spreading the disease, which was a punishable offence under the Penal Code.

Dr. Dutt asked if no arrangement could be made for the removal to hospital of such cases. The Chairman said nothing could be done unless the party was willing. It was a very difficult matter to deal with, because so many objected to going to hospital.

Dr. Dutt said he had also known cases where people with smallpox covered themselves up and left Calcutta. The Chairman suggested that Dr. Dutt might raise the question in the Health Committee. Dr. Dutt agreed to consider the matter and make a motion in the Health Committee. The Hon'ble Rai Radha Churn Pal Bahadur said something practicable could be done if the Commissioner of Police instructed constables to report on all such cases to the Health Department or the Sanitary Inspectors of the District. The latter could then make arrangements for the removal of the patients.

Though the Police appear to have no power to remove the patient, yet there is no doubt that Municipal authorities have power to remove such patients to a hospital. All the Municipal authorities are required by statute to construct and maintain hospitals with all proper appurtenances for the treatment of infectious or dangerous diseases within their local limits; and all the statutes expressly provide that where any person is suffering from a dangerous disease and is without a proper lodging or accommodation or lodged in a place occupied by more than one family, the local authority may remove or cause such person to be removed to the said hospital. Special provision is also made with respect to females.*

This statutory provision refers not merely to the needs of the patient but also to the danger which may be caused

* See Secs. 421-34 of Bom. Act III of 1888; Sec. 516 of Ben. Act III of 1899; Sec. 366 of Mad. Act III of 1904; Law of Municipal Corporations in British India, Vol. III, p. 392.

to others.[†] In England, under the Public Health Act a similar provision is made.[‡]

This provision applies to all cases of persons suffering from infectious diseases where they cannot be effectively isolated so as to stop the spread of the disease.

If the Police co-operate with the Local Authority there can be no difficulty in removing a person suffering from smallpox and appearing in public, to hospitals specially provided for the purpose.

Chalk as Fuel.

IN Canada and the United States a coal-peat fuel has been utilised somewhat extensively, the peat being mixed with coal-breeze and then pressed into briquettes. Such fuel has been found efficient and economical. In Germany the most common practice is to use the peat for the bulk protection of electricity. The electric generating station is set up in close proximity to the peat-bog, and the peat is used for the production of producer-gas which drives huge generators. One of these stations, which has not been long in operation, had an output, prior to the outbreak of the war, of ten thousand horse-power-hours for lighting and power. But it is not generally known that chalk can be converted into a profitable fuel. If the chalk is pulverised and then combined with 30 per cent. of breeze and 10 per cent. of solidified tar, the mixture being compressed into small briquettes or pebbles about the size of a chicken's egg, the chalk briquettes will burn with perfect satisfaction either in an open grate or under a boiler. This fuel has the advantage of being smokeless, has a high calorific value, and burns freely. The cost of producing such fuel may be decreased by utilising the refuse and garbage

[†] *Warwick v. Graham*, (1899) 2 Q. B. 191.

[‡] See *Halsbury's Laws*, Vol. 23, pp. 454, etc.; and *Ency. of L. & G. Law*, Vol. 2, pp. 436, etc. See also *Just. Peace*, Vol. 77 (*Journal*), p. 172.

collected from the household dust-bin as one of the constituents of the briquette. The residue of such fuel possesses an economic value, in as much as lime forms the larger portion of the ash.—*Cham. Jour.*

Notes.

[Madras.]

THE Local Government Board have issued Part III of their 43rd Annual Report, dealing with public health and local administration, county council administration and local taxation and valuation. The portions dealing with “infectious diseases,” infant care, milk supply and sale of food and drugs legislation are highly interesting and instructive.

The question of levying a pilgrim tax is being considered by the Madras Government in connection with the revision of the District Municipalities Act.

Corporation of Madras.

The Budget of the Madras Corporation for 1915-16, as revised by Government, closes with a balance of Rs. 1,32,610, of which Rs. 9,060 appertains to the water and drainage tax fund, Rs. 37,950 to the lighting fund and Rs. 2,090 to the capital account of the general fund; Rs. 3,544 represents the unspent balance of the Special Provincial grant sanctioned for the construction of bear-pits and an aviary, in the Peoples' Park. The balance under the Revenue account of the general fund amounts to Rs. 79,966 or 5·0 per cent. of the estimated ordinary receipts under that fund.

Madura District Board.

RAILWAY.—In pursuance of the recommendation of the Government, the District Board of Madura has adopted the terms agreed upon in the case of the Podanur-Pollachi line, accepting the offer of the South Indian Railway, to work the line for 50% of the gross earnings inclusive of hire of rolling stock.

Coimbatore.

PODANUR-POLLACHI RAILWAY.—The Coimbatore District Board has sanctioned the payment of Rs. 75,000 for expenditure on the Podanur-Pollachi Railway during the first quarter of 1915-1916.

Kurnool.

WATER-SUPPLY.—The Municipal Council of Kurnool has resolved that houses with an annual rental value of less than Rs. 100 should not be given house connections in future. The Council has also resolved that the rate for water taken in excess of the free allowance prescribed for houses shall be one and a quarter anna for every 100 gallons or fraction thereof.

[Burma.]**Rangoon Municipal Committee.**

The following bye-law made by the Rangoon Municipal Committee under section 142, clause (b) of the Burma Municipal Act, 1898, has been confirmed by the Lieutenant-Governor :—No hand-cart shall carry a load exceeding three quarters of a ton.

Kyaiklat Municipal Committee.

LATRINE TAX.—The Kyaiklat Municipal Committee having submitted proposals under the provisions of section 49 of the Burma Municipal Act, 1898, for the imposition of a latrine-tax, at the rate of 3 per cent upon the assessed annual value of all buildings within the limits of the Municipality other than those in the Kwinbauk Ward, the Lieutenant-Governor, in exercise of the powers conferred by section 51, sub-sections (5) and (7) of the Act, has sanctioned the imposition of the said tax with effect from the 1st October 1915, provided that the minimum charge leviable shall be four annas per mensem.

SCAVENGING TAX.—The Kyaiklat Municipal Committee having submitted proposals under the provisions of section 50 of the Burma Municipal Act, 1898, for the imposition of a scavenging-tax, at the rate of 1 per cent upon the assessed annual value of all buildings within the limits of the Muni-

pality in respect of which the Municipal Committee provide by their agents for the performance of the duties usually performed by sweepers for the removal of rubbish, the Lieutenant-Governor, in exercise of the powers conferred by section 51, sub-sections (5) and (7) of the Act, has sanctioned the imposition of the said tax with effect from the 1st October 1915, provided that the minimum charge leviable shall be two annas per mensem.

[Bengal.]

CHARITABLE ENDOWMENT.—Babu Kedarnath Banerjee of Baltikri (Howrah District) has made an Endowment of Rs. 42,000, yielding an annual income of Rs. 1,680, for the upkeep of the Charitable Dispensary at Baltikri, which was constructed from funds provided by that gentleman.

[Bombay.]

Bombay Corporation.

The following additional regulation under section 81 (2) of the Municipal Act has been passed by the Bombay Corporation, regarding the grant of leave and leave allowances to municipal employés with retrospective effect in all cases in which municipal employés are allowed to proceed on active service :—Leave on furlough pay in combination with privilege leave due may be granted to municipal employés holding permanent substantive appointments proceeding on active service in Europe or out of India. Such absence will not constitute an interruption of duty for purposes of leave already earned and will count for pension but not for leave. It will also count towards increments in the case of incremental appointments. These rules will apply only in the case of such wars as the Corporation may deem fit to determine.

[Central Provinces.]

Jubbulpore Municipality.

The new by-laws made by the Jubbulpore Municipal Committee for regulating the conduct of its meetings, and business, etc., have been confirmed by Government and are published in the Government Gazette. The by-laws also provide for the division of duties among the members and for the formation of sub-committees.

Statistical Information.

Provincial Vital Statistics.

THE following table shows the birth and death rates in the several provinces of India for 1914. It will be noticed that, as in the previous years, the highest birth rate, *viz.*, 51·37 was recorded in the Central Provinces. The highest death rate (36·69) was also recorded in the same province, the United Provinces coming next with 33·46.

Provinces.	Birth 1908-12.	rate. 1913.	1914.	Death 1908-12.	rate. 1913.	1914.
Assam	32·09	33·06	32·94	27·61	27·66	24·66
Bengal	35·27	33·75	33·86	28·78	29·38	31·57
Bihar and Orissa	39·90	42·10	42·38	34·24	29·14	28·32
Bombay	35·92	34·96	37·43	29·60	26·63	29·48
Burma	34·20	32·61	35·40	27·63	24·99	24·13
Central Provinces	51·52	49·26	51·37	38·62	30·28	36·69
Madras	32·0	32·2	33·5	23·1	21·4	25·0
N. W. Frontier Province	35·0	36·17	32·7	26·0	24·65	25·8
Punjab	42·3	45·40	46·28	35·4	30·20	31·96
United Provinces	40·20	47·67	44·93	40·72	34·84	33·46

New Water Supply and Drainage Schemes.

[BIHAR AND ORISSA.]

We are obliged to the Government of Bihar and Orissa for the following statement of new Water-supply and Drainage Schemes in that Province. The statement shows the stages reached on the 30th April, 1915, by the several schemes under investigation.

Serial Number.	Name of Town.	Nature of Scheme.	Present stage of the scheme as on 30th April, 1915.	Amount of Estimate (approximate in those cases in which the scheme is not worked out in detail)
PATNA DIVISION.				
Arrah	..	Drain flushing and improvement to the Water-works	Work in progress	Rs. 1,20,000 (Final Estimate.)
Barh	..	Drainage	Under consideration of the Municipality	32,057
Bihar	..	Do.	Do.	88,000
Buxar	..	Do.	Do.	....
Dinapur-Nizamut	..	Do.	Do.	47,000
Gaya	..	Do.	Five sections of the scheme sanctioned; work is in progress.	7,05,000
Do.	..	Water-works	Completed	7,95,000 (Final.)
Khagaul	..	Drainage	Under consideration of the Municipality	9,200
Patna (New Capital)	..	Sewerage	Experiments with trial trench will shortly be made	3,85,000
Do.	..	Water-works	Pumping experiments are in progress	7,33,768 (Inclusive of the Water-works for Bankipur.)

Serial Number.	Name of Town.	Nature of Scheme.	Present stage of the scheme as on 30th April, 1915.	Amount of Estimate (approximate in those cases in which the scheme is not worked out in detail.)
				Rs.
	Patna City	Drainage & Sewerage	Under preparation by the Sanitary Engineer	6,00,000
	Do.	Water-works	Administrative approval given; the detailed project is awaiting further investigations in regard to the type of filters to be adopted	13,50,000
	Sasaram	Water-supply (Improvement of Sher Shah's Tank)	Work in progress	19,963
	Do.	Drainage	Surveys completed	....
TIRHUT DIVISION.				
	Bettiah	Water-works	Under consideration of the Municipality.	3,95,000
	Chapra	Drainage and Water works	Experimental borings in progress.	5,00,000
	Darbhanga	Do	Under consideration of the Municipality.	2,77,000
	Motihari	Drainage	Tenders called for.	77,217
	Muzaffarpur	Water-works	Work in progress.	4,64,000
	Do	Sewerage	Administrative approval given; District Engineer is preparing detailed estimates	4,52,500
	Samastipur	Drainage	Administrative approval given; detailed estimates are under preparation by the Sanitary Engineer.	21,609

BHAGALPUR DIVISION.

Bhagalpur	..	Drainage	..	Under consideration of the Municipality.	1,64,000
Do	..	Water-works	..	Scheme sanctioned, but it is being further revised by the Sanitary Engineer.	1,47,600
				(Cost of the urgent portion.)	13,404
Deoghar	..	Drainage	..	Scheme sanctioned; tender under consideration.	24,000
Kishanganj	..	Do	..	Scheme sanctioned, but the estimate requires further revision by the Sanitary Engineer.	30,642
Madhupur	..	Do	..	Scheme sanctioned; tenders received; but the scheme requires modifications.	2,22,000
Monghyr	..	Do	..	Scheme sanctioned; work in progress and nearing completion.	40,630
Purnea	..	Do	..	Administrative approval given; detailed project under preparation by the sanitary Engineer.	56,000
Sahibganj	..	Do	..	Scheme sanctioned; and work in progress.	...
Dumka	..	Do	..	Survey in progress.	

ORISSA DIVISION.

Cuttack	..	Waterworks	..	Under consideration of the Municipality.	5,00,030
Puri	..	Drainage	..	Western outfall completed Eastern outfall scheme is under preparation. Recommendations of the Pilgrims Committee also awaited.	...
Do	..	Waterworks	..	Experiments are being made to prove the dry weather supply.	4,25,000

CHOTA NAGPUR DIVISION.

Dalkonganj	..	Waterworks	..	Work in Section 1 completed; detailed plans and estimates for Sections 2 and 3 are under consideration of the Municipality.	18,345
Giridih	..	Drainage	..	Under consideration of the Municipality.	17,000

Cleaning Drains.

Machine for clearing, cleansing, and repairing Drains.

THIS is an invention which should appeal to architects, property owners, builders and others, as the work is done at a nominal cost, and without necessitating trench excavations. The system can be used in all drains irrespective of depth beneath the surface, all defects in the drains being repaired with equal facility. If a repair is required the drain is first cleared of all obstructions. This is effected by means of revolving iron wheels fitted with iron spikes, which are passed through the drain, and the rapid rotation of the wheels serves to loosen all obstructions which may be lying in the conduit, or which may have become attached to the inner wall of the drain. Then revolving brushes are introduced, which ensures the thorough scrubbing of the surface, and the loosened matter is flushed away with water. The repairing machine is now inserted, and as this passes through the drain, cement, under heavy pressure, is forced into any cracks, holes, or fissures that may have developed, the process being repeated until it is impossible to force any more cement into the defective places. Although cement is applied in this manner, it should be remarked that no cement is deposited on the interior of the pipes, as the dressing is confined to defects. Thus the original surface of the pipe is preserved. Drains repaired in this way have been tested searchingly, and have been proved to preserve absolute water-tightness for five years after being so treated. The cost of repairing underground conduits in this manner is trifling compared with the methods generally adopted, while the method is in every way as effective as opening up and repairing or replacing defective pipes.—*Cham. Jour.*

Government Orders and Notifications.

[Madras.]

OUT of the provision of 8.22 lakhs made in the Civil Budget estimate for 1915-16 for grants to local bodies for minor sanitary works, a sum of Rs. 21,000 has been reserved to meet the cost of the purchase, by the Sanitary Engineer, of 24 kite-motion pumps and 24 galvanised iron tanks for issue to local boards for type-design wells; five lakhs have been distributed among district boards. A sum of Rs. 2,52,094 will now be distributed among certain municipal councils. The balance of Rs. 48,906 will be held as a reserve to meet demands for grants for urgent schemes; chairmen of municipalities (especially chairmen of municipalities which have hitherto been backward in submitting applications for grants) are requested to have estimates prepared and sanctioned by proper authority, if this has not been done and to apply for grants as soon as possible. [G. O. No. 850 M. dated 7-6-15.]

SALE OF QUININE PACKETS.—With reference to his suggestions that village headmen should be allowed to sell pice-packets of quinine on the same terms as postmasters, the attention of the Director, Government Cinchona Plantations, is drawn to G. O. No. 3045, Revenue, dated 9th November 1909, from which he will see that subordinate revenue officials, including village heads, have long been employed as agents for the distribution of quinine. It is the case that this agency has not proved successful owing probably in the main to the fact that village headmen do not keep regular office hours like postmasters. As at present advised the Government do not propose formally to discontinue the arrangements which in certain cases may meet a public want. They consider, however, that endeavours should be made to utilize other possible local agents, and to that end resolve to extend the facilities now enjoyed by postmasters to vaccinators and elementary schoolmasters.

2. As it would be inconvenient to require the Director of the Government Cinchona Plantations to deal directly with subordinates of this class he will be requested to place himself in communication with the district board presidents and municipal chairmen to whom they are subordinate or within whose local jurisdiction they may reside. District board presidents except in Koraput and Tanjore where the local conditions are unfavourable to the initiation of this experiment and municipal chairmen should indent upon the Director for the aggregate number of quinine packets which they may consider necessary for distribution to the vaccinators and elementary schoolmasters under their control as also to the masters of Elementary Government Schools within their local jurisdiction.

From the supply thus obtained they should issue to each vaccinator and schoolmaster seven packets each containing 100 ten-grain powders, without requiring any prepayment of the cost. The initial supply should be treated as a permanent advance to the vaccinator or schoolmaster concerned. The price of each ten-grain powder being three pies, the total proceeds of the sale of every packet will be Rs. 1-9 of which four annas may be retained by the vendor as his commission.

3. The total nett value at Rs. 1-5-0 per packet of the aggregate supply to district board presidents and municipal chairmen, which should be large enough to include a reserve stock for compliance with subsequent indents from vendors, will be considered as a permanent advance to those officers.

4. Each vendor should be instructed to replenish his stock of quinine before the supply is exhausted and for this purpose, he should, as soon as he has sold five packets, send an indent to the president or the chairman, as the case may be, together with a remittance of the value of the packets indented for at the rate of Rs. 1-5-0 a packet. If the vendor lives at a distance, he may remit the value by money order deducting the postal commission. The indent must be for not less than five

packets of 100 powders each and must not include a fraction of a packet. When the value is remitted by money order the coupon should be endorsed in the following form :—

“ Please send by return of post.....packets of quinine powders.

.....name

.....designation

.....address.”

5. The president or chairman to whom the indent is addressed should comply with it promptly from his reserve stock of quinine and should similarly take action to replenish that stock in proper time by application to the Director of the Government Cinchona Plantations accompanied by an abstract statement showing the number and gross value of packets sold by the vendors under his control at Rs. 1-5 per packet and the amount spent on money order commission and in the transmission of packets to the vendors. The net sum payable to the Director, after deducting the latter amount, should be remitted to the nearest Government treasury and the treasury receipt should be attached to the application forwarded to him.

6. When a vendor transfers charge of his office, the full amount of his permanent advance of 700 powders should be made over to the officer who relieves him, either in quinine or in cash or partly in quinine and partly in cash ; but for every one anna and nine pies paid in cash four pies may be retained over on account of the commission due for the sale of seven powders. No commission will be allowed on quantities less than seven powders.

7. Copies of instructions for self-treatment by quinine in English and the vernacular languages are available at the Government Press and should be supplied to vendors for distribution together with the quinine to literate purchasers, their substance being explained wherever possible to the illiterate.

8. The packets containing quinine powders should not be exposed to damp, as otherwise their contents may deteriorate.

9. The Director, Government Cinchona Plantations, should and will be requested to arrange in consultation with Presidents and Chairmen for the introduction of this experimental scheme at as early a date as possible. He should also comment on the working of the scheme in his annual administration reports and the Government will be glad to receive criticisms and suggestions from district board presidents and municipal chairmen. [G. O. No. 826, Revenue dated 8th April 1915.]

[Bombay.]

The following Press Note No. 4290, dated the 25th May 1915, is published by the Bombay Government for general information :—

TREATMENT OF CHOLERA BY PERMANGANATE OF POTASH.—Whenever cholera makes its appearance in a village, the water-supplies are purified by permanganate of potash. Permanganate destroys the germs which cause cholera, and thus prevents the spread of the disease. Now it occurred to certain investigators that if permanganate could prevent cholera by destroying cholera germs in water, it might also cure cholera by destroying the germs in a patient actually sick of the disease. It has been proved that if the drug is given properly it has very good effects. For several years past the Government of Bombay has issued tabloids of permanganate free of charge for use in villages. Hitherto the tabloids have been dissolved in a seer of water. The patient receives only a small portion of the drug in relation to the amount of liquid swallowed, and as the stomach is very intolerant during cholera, he often cannot retain it. Moreover, the drug has to do its work in the intestines and not the stomach, and for this purpose a pill is preferable to a soluble tabloid. The Sanitary Commissioner, therefore, has recently recommended that in future the drug should be stored in the shape of pills in all localities subject to epidemics, and

promptly issued at the first appearance of the disease. He also recommended that the pills should be issued in "treatments," similar to the quinine treatments which have become so popular. Government have accordingly issued orders that the Civil Surgeons of districts and the Deputy Sanitary Commissioners should keep suitable stocks of permanganate made up into treatments of 12 pills, and these officers will supply them to Mámlatdárs for issue, *free of charge*, in cholera-infected localities. It will therefore be most important for village officers to report immediately to their Mámlatdárs the first case of cholera in their village and to obtain a supply of treatments for distribution. The Governor in Council trusts that they and all persons of education and influence will put forward their best efforts to popularize the use of the treatments and thus save many valuable lives.

Legislative Intelligence.

[Parliament.]

DISEASE TRANSMISSION BY FLIES.—Mr. Boland asked the President of the Local Government Board what steps, if any, have been taken to inform the public as to the danger to health involved in the transmission of disease by flies under existing war conditions; whether any leaflets have been published on the subject, and, if not, whether the leaflet published by the Zoological Society of London will be utilised; and whether steps will be taken to set up a small committee to deal with the subject?

Mr. Herbert Samuel: The Board have issued seven reports on "Flies as Carriers of Infection," and they have during the last few years warned local authorities by circular, at the beginning of the summer, of the dangers of allowing accumulations of refuse, which may form breeding grounds for flies, to remain in the neighbourhood of dwellings. They have for some time past been urging individual local authorities

who are not dealing satisfactorily with the refuse of their districts to improve their methods. In a circular letter, which is about to be issued, attention will again be drawn to the matter. The War Office and my Department are co-operating in this, as in other matters, affecting the health of the troops and of the civil population. A number of local authorities have issued posters and leaflets on this subject. I am considering the preparation and issue by the Local Government Board of a series of model leaflets on this and other health subjects, which local authorities could use if they so desired. I really think it necessary to appoint a committee.

INFANT MORTALITY.—Lord Robert Cecil asked the President of the Local Government Board if, having regard to the importance, especially at the present time, of taking steps to reduce infant mortality, he will consider the desirability of amending the Notification of Births Acts, so as to confer an express power on local authorities to provide health visitors, maternity centres, and similar arrangements for promoting infant welfare?

Mr. Herbert Samuel: There can be no division of opinion as to the great importance of measures for reducing infant mortality, and I may perhaps remind the Noble Lord that the Government have undertaken to make substantial grants in aid of maternity centres and other agencies for infant welfare, which are approved by the Local Government Board. It would, I think, be an advantage if the Notification of Births Act were amended in the way suggested in the question. Notifications are of little value unless they are followed up by health visiting and by the provision of advice and skilled assistance to mothers. The Act itself confers on local authorities no express power to do this work, and at present recourse has to be had to powers in other Acts which were not framed with infant welfare particularly in view. One result is that the powers of a county council adopting the Act differ from those of a district council. If it were shown

that a small amending Bill, such as is suggested, would meet with general support, I should be glad to consider the early introduction of such a measure.

Lord Robert Cecil: Will the right hon. gentleman take steps to ascertain the views of members of this House on the possibility of doing this?

Mr. Samuel: I will inquire as to that.

[Madras.]

UNION PANCHAYATS.—The Hon'ble Rao Bahadur P. Kesava Pillai asked if Government would be pleased to state (a) the total number of union panchayats in the Madras Presidency and (b) the number of union panchayats to whom the privilege of election had been granted and also the proportion of members allowed to be elected to a panchayat?

Answer: (a) There are at present 402 unions in the Presidency.

(b) The privilege of election is now enjoyed by 24 unions. The proportion of elected seats is fixed at one-fourth of the maximum strength of a panchayat as explained in paragraph 2 of G. O. No. 1132 L., dated 31st August 1911, which has been placed on the Editors' Table.

The Hon'ble Rao Bahadur P. Kesava Pillai further asked whether Government would be pleased, in order to stimulate interest in the rate-payers for the proper working of the union panchayats, to extend the privilege of election to all the unions established at the head-quarters of sub-divisional officers, tahsildars or deputy tahsildars?

Government replied that they would be prepared to consider recommendations made by the district boards for the extension of the elective system to particular unions.

Some Recent Publications.

THE REDUCTION OF DOMESTIC MOSQUITOES : Instructions for the use of Municipalities, Town Councils, Health Officers, Sanitary Inspectors and Residents in warm climates. By Edward H. Ross. Price 5s. net.

WHAT MEN LIVE BY: Work, Play, Love, Worship. By R. C. Cabot. Price 5s. net.

SOCIAL WORK IN LONDON, 1869-1912: A history of the charity-organisation societies. By Helen Bosanquet, Ll. D. Price 8s. net.

SURVEYING AND BUILDING CONSTRUCTION FOR AGRICULTURAL STUDENTS. By A. H. Haines and A. F. Hood Daniel. Price 10s. 6d. net.

RAILROADS, FINANCE AND ORGANISATION. By William Z. Ripley, Ph. D. Price 14s. net.

THE CITY OF LONDON YEAR BOOK AND CIVIC DIRECTORY, 1915. Price 5s. net.

MUNICIPAL OFFICE ORGANISATION AND MANAGEMENT. By William Bateson, A.C.A., F. S. A. A. Price 25s. net.

Correspondence.

Chittoor District Board.

Sirs,

The Government Pleader and Public Prosecutor of Chittoor was nominated a Member of the District Board of Chittoor and appointed Vice-President on the 9th July 1912 in spite of G. O. No. 566 L, dated 10th April 1912. There were then both *in the Board and outside it* non-official gentlemen competent to hold the office of Vice-President. Now that he vacates his office on the 9th July next, it is hoped that the G. O. under reference will be given effect to at least on this occasion. There is an express G. O. to the effect that a Government Pleader is an official within the meaning of the Madras Local Board's Act.

CHITTOOR. {
June 1915. }

LOCAL SELF-GOVERNMENT.

The Local Self-Government Gazette.

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JULY

[1915

The Housing Problem.

THE first annual report of the Homestead Commission of the Commonwealth of Massachusetts is a most valuable document, presenting within a small compass, information, not hitherto easily available, regarding the efforts made by the principal States of the world to increase the supply of wholesome homes for the people. It must be of absorbing interest to us in India, at the present moment, as problems connected with overcrowding in large cities are pressing for solution and there is a widespread demand that the Government and the larger Municipalities should follow an active and enlightened land policy. No apology is therefore required if we summarise at some length the main features of the report with a view to bring out the lines of policy suited to local conditions in this Presidency.

The Commission presents an account of its activities during the past year, emphasises the need for better homes for the working classes and recommends the action which Government should, in its opinion, take to provide healthy homes which would be within the means of ordinary wage-earners. The most instructive part of the report is, however, the Appendix in which is given a clear account of the efforts made in different countries to provide healthful, low-cost houses for persons of moderate means; the laws in force in them; and the measure of financial assistance extended by the respective Governments to housing and other projects.

The problems for solution are the same in all the countries. The industrial revolution brought in its train a steady, continuous movement of the population to cities with the inevitable overcrowding and its attendant evils—increase in infantile mortality, deterioration in ‘public health, standards of life, ideals and morals’ and a ‘lowered efficiency of citizenship.’ Governments could not be indifferent to an evil which was sapping the vitality of the nation and an active policy of land and house reform was evolved in most countries.

The Commission groups the main lines of the policy followed in this respect under three heads :—

First, special taxation is imposed on unimproved land to force the owners to use it for house-building. Workmen’s dwellings are exempted from taxation and building societies are granted fiscal concessions. Also powers, more or less extensive, are taken by municipal and other bodies, to condemn unhealthful quarters, with or without compensation.

Secondly, Governments, and to a much larger extent, local authorities engage directly in house-building. Then, again, loans are granted to workers for building houses and money is advanced on second mortgages. More important than all these is the credit extended, in various forms, to co-operative and limited dividend companies, associations, unions, etc., engaged in building.

Thirdly, a large, progressive land policy is adopted in most countries. The ‘back-to-the-land’ movement which most States foster, deals with the evils of overcrowding successfully. Again, municipalities acquire and hold large extents of land, in order that they may be able to control and regulate effectually the growth of the cities.

Individual Governments adopt some of these lines of action in preference to others, local circumstances deciding in each case the exact policy followed. The aim however is the same in all cases—to take effective powers to condemn slums, to press undeveloped land into the service of the

community and to increase, by direct or indirect financial aid, the number of healthy homesteads available for the working classes and men of moderate means.

It would perhaps be helpful to illustrate this branch of the subject by a brief description of the policy followed in three typical countries—England, Germany and New Zealand.

In England, the Central Government has not engaged directly in building. The local authorities bear the responsibility in this matter. The Central Government makes loans through the Public Works 'Loan Commissioners' to local authorities for these purposes. The Public Works Loan Commissioners are also empowered to lend money out of the Local Loans' Fund to private individuals for working-men's homes and to public utility societies. There is no state guarantee. County Councils and Councils of County Boroughs are empowered to build houses on lands acquired by them. Since 1893 when Building Societies were started, there has been an enormous expansion of their operations. The Town Planning Act of 1909 has given an impetus to the movement while the planning of "garden cities" which was inaugurated in 1903 is full of promise for the future.

Germany has a more thorough-going policy. The Imperial Government and the States provide homes for their employees, particularly through co-operative building societies. The provision of homes for other classes of people is confined to municipalities; the empire has however invested large sums to finance the construction of such houses. The German towns adopt a policy of land purchase on an enormous scale. As Mr. Dawson says*:—"The extent of land owned by German towns will probably surprise those who are unacquainted with the large views of municipal enterprise held in Germany, where large towns are as ready to spend a quarter of a million pounds in buying land as an average English town of the same size is to spend ten pounds upon a watering-cart." "As a rule, it will be found that where forest and wood-land

* Contemporary Review, February 1914.

surround a town, the municipal authority has taken care to secure as much as possible for the use of the inhabitants." The advantages of this policy are thus described:—"As a consequence of its land policy, a German municipal authority generally has land of its own suitable for public works which it desires to take in hand; it can determine, within certain limits, in what directions the town shall extend; by the steady increase in the value of its estate it shares with private owners in the material gain caused by municipal growth and development; it is able to institute and assist important housing schemes; and to some extent it can check land speculation. Many instances might be given of municipal authorities which, owing to the large reserves of land in their ownership, have been able to give a new impetus to industrial development and to renew the life of old and stagnant communities." This policy of land purchase is supplemented by a 'policy of land and town development.' A large scheme of town-planning is prepared for every city by experts. The local authorities have power to decide which land shall be eligible for building purposes. Contribution is levied from owners of property the value of which is increased owing to improvements effected by the community. Provisions are also made for summary expropriation, compulsory "pooling" of undeveloped areas and other arrangements necessary to put building land to the best use. A feature of outstanding interest is the financial assistance given by German cities to Co-operative Societies. The cities subscribe to the shares of these societies, take over the mortgages they must give, sell building land to them at minimum prices, build streets, canals, etc., for them and exempt them specially from taxes.

New Zealand is comparatively a "young" country and much prominence is given there to the policy of creating small holdings for actual settlers. Loans are advanced by Government to settlers to buy land and improve them; to workers to build or acquire houses for themselves and their families; and to local authorities for such purposes. Govern-

ment also build houses for workers and sell or lease them out. In all cases, the rates of interest are low and a long term of occupation is assured. The result of these and other measures is seen in reduced infantile mortality, increase in wages and decrease in unemployment.

It is unnecessary to follow the Commission in its lucid description of the action taken in other countries. What is of interest to us is that in all of them State aid is afforded for working-men's homes, in some form or other, as summed up in the following extract from the report:—

“ Millions have been expended in England ; over 40,000 cottages have been erected in England..... In New Zealand,.....over 90 million dollars have been expended to enable settlers to acquire farms and workers to obtain homes. In the Australian States, the Governments erect dwellings or advance money for that purpose. In Continental European countries, the policy is not new : in the city of Ulm, Germany, the Municipality owns 80 per cent of the land within its jurisdiction ; the State of Prussia has expended millions in housing its own employees and other working men ; the Imperial Governments and other States have not been far behind. Even in Spain, commonly considered backward, recent legislation has been enacted for the same purpose ; in South America, Argentina, Brazil and Chile have erected several thousand cottages and the results are already observable in the attraction of skilled labour from adjoining South American countries.” The report also points out that in countries in which the State renders financial assistance for the provision of working-men's homes, the experience is that private capital, far from being deterred, has come into the field all the more readily. The safety of investments for long terms of years and of repayments spread over long periods and the practicability of constructing, on a business footing, healthy homes for men of moderate means having been demonstrated by Governments, private capital easily saw that there was a good opening for its enterprise.

After the above survey of the policy of other countries, the principal recommendations submitted by the Committee, in its report, are easily understood. These are briefly :—Every large city should have a local town-planning board ; cities should take special powers for land-development, for assessment of “betterments,” etc ; efforts must be made to organise improved housing companies ; and, the principle of State aid should be recognised and acted upon. In a subsequent article, we propose to examine local conditions in Madras and consider how far action on these lines is necessary or desirable.

Local Self-Government in India.

[BY THE HON'BLE DR. T. M. NAIR.]

LOCAL SELF-GOVERNMENT originated in India during the Viceroyalty of Lord Mayo. But it was not till 1882 when Lord Ripon was the Viceroy that any appreciable development of Local Self-Government took place. The Resolution of Lord Ripon's Government, dated 18th May 1882, must be regarded as the real beginning of municipal institutions in this country. Lord Ripon saw that as education advanced there was rapidly growing up all over the country an intelligent class of public-spirited men whom it was not only bad policy but sheer waste of power to fail to utilize. And His Lordship said in the Resolution of 18th May :—

“Under these circumstances it becomes imperatively necessary to look around for some measure of relief ; and the Governor-General-in-Council has no hesitation in stating his conviction that the only reasonable plan open to the Government is to induce the people themselves to undertake as far as may be the management of their own affairs ; and to develop or create, if need be, a capacity for self-help in respect of all matters that have not, for imperial reasons, to be retained in the hands of the representatives of Government.”

Even at that time there were not wanting critics who said that the people of this country were entirely indifferent to the principle of self-government and that experiments already

made in that direction had been failures. Lord Ripon's reply to those criticisms was quite characteristic. His Lordship said:—

“There is reason to fear that previous attempts of Local Self-Government have been too often over-ridden and practically crushed by direct though well-meant official interference. In the few cases where real responsibility has been thrown on Local Bodies and real power entrusted to them, the results have been very gratifying.”

In fact, according to Lord Ripon the real basis on which effective and efficient self-governing institutions were to be established was non-interference in matters of detail by the officers of the general administration. On this point the Resolution of 18th May 1882 says:—

“Special attention will be required in settling the relations between the various Local Bodies and the officers of general administration and in providing for a certain measure of control and inspection on the part of the Government. It would be hopeless to expect any real development of Self-Government if the Local Bodies were subject to check and interference in matters of detail.”

It was also laid down by Lord Ripon that Local Bodies should all contain not less than one-half, not more than two-thirds, of elected non-officials, that the Taluq should ordinarily be the minimum area to be placed under a Local Board, that members of the Board should be chosen by election wherever possible, that the Government should revise and check the acts of Local Bodies but not dictate them, and so on and so forth. The main principles embodied in Lord Ripon's Local Self-Government Resolution are excellent, and if acted upon in a sympathetic and encouraging spirit would have resulted in a much greater development of municipal institutions than we see at present. And now after 33 years we have the Resolution of the Government of India reviewing its Local Self-Government policy. It will be interesting to analyse what the Government of India think about the amount of success achieved in the field of Local Self-Government; what it thinks are the obstacles in the way of progress, and what is

still more important, as to what its future policy is. I am glad to think that the Government of India have come to the conclusion "that the results have on the whole justified the policy out of which Local Self-Government arose."

But this expression of opinion is a little half-hearted. The Government go on to say that there are considerable obstacles still in the way of realising completely the ideals which have prompted action in the past. According to the Government of India the main obstacles still standing in the way of municipal progress are :—

- (1) the smallness and inelasticity of local revenue,
- (2) the difficulty of devising further forms of taxation,
- (3) the indifference still prevailing in many places towards all forms of public life,
- (4) the continued unwillingness of many Indian gentlemen to submit to the troubles, expense and inconvenience of election,
- (5) the unfitness of those whom these obstacles do not deter,
- (6) the prevalence of sectarian animosities,
- (7) the varying character of the municipal area.

A careful study of the working of municipal institutions all over the world will disclose that these obstacles which stand in the way of municipal progress in India are by no means peculiar to this country. In describing the City Governments in the United States, Mr. Bryce observes :—

"We find able citizens absorbed in their private business, cultivated citizens unusually sensitive to the vulgarities of practical politics and both sets therefore equally unwilling to sacrifice their time and taste and comfort in the struggle with sordid wire pullers and noisy demagogues."

If that is the case in America, can it not be likely that the same cause exists here to a certain extent also? And then again how has the Government carried out the principle of not interfering with Local Bodies in matters of detail. I

will quote the opinion of a very fair critic of the municipal policy of Government, viz., The Hon'ble Sir P. S. Sivaswami Ayyar himself. The Hon'ble Sir Sivaswami Ayyar, in his Presidential address at the Tanjore District Conference held in March 1907, said thus :—

“ The exercise of their powers by the Municipalities is subject to numerous restrictions. If the Chairman wishes to appoint a school master he has to consult the Inspector of Schools or the Assistant Inspector. If he wishes to appoint a person to an office carrying a salary of Rs. 50 and upwards, it is subject to the sanction of the Governor in Council. If the Chairman wishes to punish a medical or vaccination servant whose services have been lent to the Council, he must consult the District Medical and Sanitary Officer and the punishment cannot take effect until it is confirmed by the Surgeon-General or the Sanitary Commissioner. While it is desirable that the Government should possess a reserve of power to veto any objectionable proposals, it is inexpedient that the power should be exercised frequently or in small matters. Such interference tends to diminish the authority of the Chairman and the Municipal Council, and renders the administration more difficult, and will deter people from serving on the Council. I am not in possession of any information with regard to such interference in the Municipalities of this District. But I have been furnished with such instances in the Salem Municipality, and if a habit of petty and vexatious interference can be fairly deduced therefrom, I fancy it is likely to have manifested itself in the dealings of the Local and Municipal Department of Government with the Municipalities in this District also. I shall now give you some of the illustrations furnished by Salem. In 1895-96, a proposal to increase the salary of the Public Works Overseer was negatived. In 1896-97, the proposals of the Municipality to increase the salary of the Head Master of the Ponnampet Salary Result School, to appoint an additional teacher on Rs. 6 and a peon on Rs. 3 for the same institution were vetoed. In the same year, an increase of salary to the sweeper of the travellers' bungalow from Rs. 2 to 3 was refused. In 1897-98, an increase of Re. 1 in the salary of the Gymnastic Instructor of the two Town Schools and an increase of pay from Rs. 4 to 5 of nine peons or bill collectors (I am not sure which) were denied. In

1900-01, the Government refused to sanction an increase of Re. 1 in the salary of the Head Master of the Ponnamapet School, the revision of the scale of salaries of the teachers of the Salem College, the allotment of Rs. 100 for prizes for boys and an increase of 8 as. in the salary of the office peon. In 1903-04, proposals to entertain two Inspectors of vehicles and animals on a salary of Rs. 10 each, to increase the salaries of the Head Masters of the Ammapet and Kitchupalayam Schools by Rs. 2 each, to increase the salary of the Hospital and office peons by Re. 1 and to make a grant of a conveyance allowance of Rs. 5 to the Supervisor of Primary Schools were rejected. In 1904-05, an increase in the salary of the Head Master of the Ammapet Primary School from Rs. 8 to 10, of the office peon from Rs. 7 to 8, of the Manager's personal allowance from Rs. 5 to 10 were negatived. In 1905-06, an increase of Re. 1 to the College peon and an increase of Rs. 2 each for six scavengers on Rs. 3 pay were vetoed. Coming to more important recommendations by the Municipality, a provision of Rs. 2,000 for the extension of the Salem College Buildings and an increase of salary to some of the members of the College staff were vetoed. *If this is the sense in which the Government interpret their relations to Municipalities, Local Self-Government is hardly worth the name and no one with any sense of self-respect would consent to serve in a Body whose functions are limited to carrying out the orders of the Government."*

And yet for over a quarter of a century that was the spirit in which the Government supervised local institutions in this country. The Hon'ble Sir P. S. Sivasawanny Ayyar is not given to exaggeration and he has, in the passage quoted above, given a faithful picture of the manner in which the Government in this Presidency have gone on interfering in matters of petty detail with all the self-governing bodies in this Presidency including the Presidency Corporation. There we have an explanation of the existence of some of the obstacles which the Government find in the way of municipal progress. These obstacles then to a certain extent have been created by the action of Government itself. Now after 33 years the Decentralization Commission have recommended that the minute control exercised by Government over municipal finance should be relaxed. The various Local

Governments have replied with varying degrees of reluctance that they would endeavour to relax those restrictions. To quote the words of the Government of India Resolution :

“Other Governments concede certain relaxations of existing rules. The Government of India accept these opinions for the present but they nevertheless regard recommendations of the Commission as expressing a policy to be steadily kept in view and gradually realised.”

To carry out one of the main principles which Lord Ripon's Government regarded almost as a corner stone of Local Self-Government after 33 years of trial of municipal institutions and after it has strongly been recommended upon by a Royal Commission, if there is so much hesitation and so much of caution, we may almost despair of the Government of India ever carrying out this principle in the spirit in which it ought to be carried out.

With the District Boards and Taluk Boards the Local Governments do not agree to the same extent as they do with regard to Municipalities in relaxing restrictions and giving the Local Boards free control over their affairs. In fact, it was with a sense of disappointment that I studied the Local Self-Government Resolution of the Government of India of 28th April 1915. In that, in spite of the recommendation of the Decentralization Commission, the Government of India seem inclined to leave everything to Local Governments. It was different with the real father of Local Self-Government in India. Lord Ripon stood for ideals which were very often abhorrent to his official subordinates and yet he strove against heavy odds to enforce his views. But with others less faithful to their ideals a policy of *laissez faire* seems to prevail. Local Governments in India remind me of Lord Morley's sketch of the man of the world with “his cordiality towards progress and improvement in a general way and his coldness and antipathy towards each progressive proposal in particular.”

Local Governments in India do not care to move. And to leave all progress in Local Self-Government to such conservative bodies is to condemn them to stagnation and re-action.

The question of the relation between Imperial and Local taxation has not been exhaustively gone into even by the Decentralization Commission. The Government of India now say that the smallness and inelasticity of local revenues and the difficulty of devising further forms of taxation are among the main obstacles in the way of municipal progress. In Lord Ripon's Local Self-Government Resolution it was contemplated to transfer the control of expenditure of specially local character to Local Bodies. Evidently Lord Ripon's idea of financing Local Bodies was by a system of "assigned revenues". Local Bodies can only be financed by a combination of systems of direct grants, assigned revenues, local taxation, municipal trading and so on. When the Imperial Government comes down in a greedy manner and takes for itself all possible sources of revenue, it is no wonder that difficulties are experienced in devising new forms of local taxation. Before Local Bodies are established in a satisfactory financial condition the incidence of Imperial and Local taxation ought to be definitely fixed.

A good deal has been said about the tendency to corruption that is generally observed during municipal elections in India. This again is not peculiar to India. All democracies have a tendency to corruption. It is one of the functions of the Imperial Government to correct the vicious tendencies of democracy and to guide its activities into healthy channels. It was a serious omission on the part of the Imperial Government not to have safeguarded municipal and local elections with an adequately strong Corrupt Practices Act. Nor is the machinery for supervising and controlling municipal bodies in India an efficient one. A district official is a bureaucrat pure and simple. He is incapable of understanding, much less of sympathizing with, the aims and methods of popular self-government. The older a municipality gets in India, the younger becomes its civilian master. Municipal progress is slow being mainly hampered by red-tape. At present the outlook is not very cheerful. But things may improve. At least let us hope so.

Well Boring in Bombay.

THE supply of wholesome water is one of the most pressing problems arising for solution in every Municipality, and very often the resources of Municipalities are, in spite of large Government grants, sorely tried in the execution of water-supply projects. While the system of conserving water on high levels for distribution in towns has been gradually introduced after the advent of the British rule, the vast bulk of the country is still dependent on tanks, wells, rivers and irrigation channels. The objectionable use to which the tanks and beds of rivers and channels are almost invariably put to, however, renders the tank and river water unhealthy, and sudden outbreaks of epidemics are commonly attributed to the contamination of this source of supply. In one of his reports on the prevalence of cholera in the Tanjore District, Lieut.-Col. H. Thompson, Sanitary Commissioner for Madras, wrote:—"The first annual outbreak of cholera usually occurs from the scouring by the freshes of the river and channel beds which during the dry weather, from February to June, are used as latrines. Throughout the district, burial and cremation grounds are, wherever possible, located on the banks or in the beds of the rivers and irrigation channels. Where no river or channel is available, the tank bed is used." This description, we are afraid, is generally applicable to all districts.

This circumstance as well as the difficulty of conserving water on high level in many localities, as for instance, in Cochin, has induced water engineers to experiment in well-boring operations. The experiments have been more or less spasmodic and were not carried out on any definite plan. The Government of Bombay, therefore, appointed a Committee in August last for investigating and reporting upon the possibility of increasing the water-supply by well-boring both for drinking and agricultural purposes, and to advise on the policy to be adopted in future.

The Committee have now submitted their report, with accompaniments, including a report from Mr. Heron, Assistant Superintendent, Geological Survey of India, and a letter from the Director, Geological Survey of India, in which certain geological aspects of the question are discussed.

The field of operations has been chiefly confined to the alluvial soils of Guzarát. In that area, the Agricultural Department has, within the seven years ending 1913-14, sunk 369 bores in all, of which 238 were completely successful and has added thereby a supply of 864,750 gallons per hour. These holes are comparatively shallow, not exceeding 200 feet in any case.

The Sanitary Department, sinking for a drinking water-supply, has undertaken nine borings, the deepest of which reaches 842 feet and is still in progress. In quality, however, the water obtained from the deep borings has not always been satisfactory.

In the Deccan, the Agricultural Department carried out 13 borings in 1913-14 of which eight were successful. The novel feature of the operations consisted in the use of the Mausefield Water Finder to indicate the localities where bores should be made. The results are stated to be promising.

Of deep boring outside Guzarát, the only example is the boring carried out by the Hubli Municipality, which was taken to a depth of 300 feet.

The Committee have made the following recommendations:—

(1) That the work should continue to be done departmentally and not be entrusted to contractors;

(2) that the Agricultural Department should be provided with additional funds in order to push on the work in Guzarát and extend their operations to other parts of the Presidency;

(3) that the condition of the sub-soil water should be investigated wherever it can be made use of for agricultural purposes ;

(4) that in addition to the shallow borings carried out by the Agricultural Department, experimental deep-borings should be undertaken by the Sanitary Department in each of the geological formations to be found in the Presidency, the borings to be carried out as part of water-supply schemes or, if that is not possible, as experiments at Government expense ; and

(5) that the results of past and future work by both Departments should be recorded on maps and large scale plans and charts and studied by an expert in order that the knowledge obtained may be scientifically applied.

The Government have generally approved of the recommendations of the Committee. They attach great importance to the fourth recommendation which however postulates the concentration of work in one or two localities until sufficient data have been collected. The Government are not in favour of costly experiments being made except in Guzarát where the geological conditions offer most chances of success unless in connection with water-supply schemes. They observe that when the problem in Guzarát has been solved, experiments may be undertaken in other areas according to the relative order in which, on expert advice, they are classed as likely to give successful results.

The following note submitted to the Committee by Mr. W. M. Shutte, Agricultural Engineer, Poona, will be read with interest :—

In making the following remarks on the question of boring, an endeavour has been made to adhere strictly to facts, and most of the matter contained herein is based on my own experience.

With the dissemination of knowledge bearing upon sanitation and a general recognition of the terrible risks of pollution in wells

and exposed receptacles containing drinking water supplied by surface drainage, it is to be hoped that the days of the shallow dug well and open tank for drinking purposes are almost over.

Take the village tank, generally a slime covered muddy depression filled with a highly discoloured and offensive liquid, in which the buffaloes wallow, clothes are washed, the villagers bathe, and use for drinking and cooking purposes.

No price would be too high to pay for absolute security against contamination in this manner of the most essential and most largely consumed article of our daily food, and no matter how costly the deep-bored well, its advantages would certainly outweigh the initial expense.

But to such a high state of efficiency has deep well boring now been brought by the most advanced firms in England and America, who make a speciality of this branch of engineering, that the outlay based on even a five or seven years' supply only is much less in a deep well than in a shallow dug well.

Moreover, whilst the one is never failing both in quantity and quality, the shortcomings of the other are sure to be emphasised during periods of extreme drought when our needs are most urgent, and especially is this applicable to India.

As an aid to the discussion before us, it will therefore be of interest to state a few facts obtained during recent years by the Agricultural Department. Boring operations originated in Gujarāt where about 369 bores have been made since the year 1907, out of which 238 have been successful: by successful I mean that the increase of water as a direct result of boring shall not be less than one kose, i.e., 1,500 gallons per hour. Now as none of these bores exceeds 200 feet from the surface, it is a question for consideration whether a deeper bore would not have given a more substantial supply and still remained sweet.

The question before us is a very important one and requires investigation both from a sanitary and agricultural point of view, and perhaps the work of the Agricultural Department (which is tabulated) will be helpful to this committee. Judging in the light of recent events it is obvious that artesian supply can be expected ;

that tube wells and pumps, either worked by hand or by power, are a practical proposition ; and that there is still something we can teach the rayats with regard to well boring. Whether the results secured justify the continuance of experiments on a large scale is a matter of opinion. Personally I am convinced there are immense possibilities in this direction.

The rayats in Gujarát, where most of our work has been accomplished, have received great benefit as the result of boring ; in some cases an increase of ten koses has been possible, which, in other words, means 15,000 gallons per hour, a volume of water sufficient to irrigate 33 acres of sugarcane.

I have on record two such cases in Kaira where bores have been made, one 80 and the other 180 feet from the surface, in each case the original supply has been augmented to the extent recorded above, the increased supply is also continuous and in each case the water was struck during the months of April and May, so that it may be safe to conclude that the increase is not the result of immediate rainfall.

None of the bores taken has given less than one kose increase, which itself is sufficient to irrigate two acres of sugarcane, and the water, as a result of all these bores, has risen sufficiently near the surface to admit of its being drawn out either by means of *mhotes* or centrifugal pumps, but in no case has it been necessary to use a deep well pump.

From this it will be obvious that no special conditions have been enforced ; the same appliance used before boring has been used after.

The result of boring, however, has been so valuable that some of the cultivators are thinking of installing an expensive pumping plant and increasing the area under cultivation. The volume of water obtained as a result of boring from the total number of bores taken in Gujarát since 1907 up to date amounts to 864,750 gallons per hour, which is sufficient to irrigate 2,144 acres of sugarcane or supply 864,750 people with drinking water.

In the light of this result secured under discouraging conditions (and until quite recently having only insufficient tools and unskilled

men) I venture to submit that this is in itself sufficient to justify experiments on a large scale.

Much discussion seems to have been the result as to what is meant by artesian supply. The correct designation of "artesian well", so called from the province of Artois in France, is a shaft sunk or bored through non-absorptive strata until a water bearing stratum is tapped, when the water is forced upwards by the hydrostatic pressure due to the superior level at which the rain water was received. The term artesian was originally only applied to wells which overflowed, but nearly all deep wells are so called without reference to their water level if they have bore holes.

A flowing well is certainly the thing to be aimed at, but I take it that if a good supply can be secured which will rise within suction limit from the surface, the result will more than justify the expense. To my mind this subject, so far as India is concerned, has been treated too much from a theoretical and too little from a practical point of view. In England and America and especially in America, they think very little of taking a bore two and three thousand feet deep. In England, I have myself taken part in a prospecting campaign for coal, and it was considered a shallow bore if under 2,000 feet. In one particular instance which I have in mind where a bore was taken 960 feet, the operations had to be abandoned owing to the enormous force of water which by the way came up a 6 inches pipe and was sufficient to keep four Grieve sinking pumps working night and day for two years, which pumps delivered 112,000 gallons per hour. The water in this case was sweet and was used by the whole staff.

In America, well drilling is carried to a fine art, and men having no previous experience purchase a drilling set and soon become efficient in making a bore, and in many cases estimate for bore holes and take up the business in much the same way as a builder or contractor would carry on his business.

As regards the little work this Department has done in the Deccan, I think the result is both encouraging and instructive, especially as the Deccan trap has generally been looked upon as an impossible proposition. Since January 1913, about 13 bores have been made in the Deccan trap, 4 of which have given sub-artesian supply and perhaps the most striking case is the one at Karmāla,

Sholapur district, where previous to boring the Mansfield water-finder gave strong indications of an underground current, which the boring machine afterwards proved to be correct. The site selected was in a disused well which had been dry for three years and as the strata was trap rock and the people in the village of Karmála were without water except that which was brought 3 miles and then not fit to drink, the result is all the more interesting and valuable and may be described as follows :—

A bore was taken in the bottom of a well 35 feet deep and at a distance of 17 feet 6 inches from the bottom or 52 feet 6 inches from the surface, potable water was struck and rose 9 feet 6 inches up the bore; subsequent pumping operations proved that 1,500 gallons per hour were possible.

Other cases are recorded from Sholapur and Poona where water has been tapped under pressure. I am assured that such evidence is sufficient to justify a continuance of boring on a large scale.

During the past year I have found the Mansfield water-finder a most valuable aid in prospecting for water in the Deccan trap and the Musto borer a most useful and efficient hand borer.

We may add that in the Madras Presidency, in investigations for water-supply in places where natural sources are not available or suitable, boring operations form the chief feature. Cochin and Kumbakonam are instances. In the former town, the experiment is still in progress. In the latter, the deep boring has been completed with very excellent results. The water both in quantity and quality is reported to be very satisfactory.

We would strongly recommend to the Government of Madras and other Governments who have not carried out and co-ordinated the boring experiments hitherto carried out, to follow the example of the Bombay Government and appoint similar Committees. The results of the work of such Committees should be useful and valuable and tend to minimise failures and the resulting expenditure on preliminary boring operations.

Sanitary Aspects of Irrigation.

[BY HORMUSJI NOWROJI, B.E., A.M.I.C.E.]

IN a very thoughtful and informing paper on "Indirect Benefits of Irrigation," read before the East India Association, Mr. Henry Marsh, C.I.E., M.I.C.E., produces some cogent facts and arguments in confutation of the theory that artificial irrigation deteriorates the healthiness of the irrigated area. He argues that in the net result irrigation conduces to the improvement of the health of the people residing in irrigated areas. About the latter end of the last century, sanitarians were wedded to the theory that canal irrigation was the cause of malarial fever and other tropical diseases. That dictum is being slowly but steadily subverted; and the violent opposition to wet cultivation, which some sanitarians set up a quarter of a century ago, is breaking down. In the following extract from Mr. Marsh's paper, he refutes the theory that artificial irrigation is injurious to health:—

"Years ago it was thought that canal irrigation must be the cause of many forms of disease to which Natives and Europeans are liable in a tropical climate. One famous Sanitary Commissioner was rabid on the subject, and pressed the Local Government of the North-Western Provinces not only to close up some canals, but to desist from further extensions. When the case was referred to the Secretary and Chief Engineer for Irrigation, he pleaded that canal irrigated villages would show a better return of health than those of unirrigated villages in the same latitude. He considered that this would be the case, as the inhabitants of the former were better clothed and better fed. Investigation proved that the Chief Engineer was right and the matter was allowed to drop. Very little argument is required to show that, though fever may be caused by irrigation, the sanitary advantages far outweigh the disadvantages."

The relation between irrigation and health is of such paramount importance, that it is worth treating the subject at greater length and in greater minutiae than Mr. Marsh found

it possible to do in a paper, which was a comprehensive survey of the benefits of irrigation, economic, material, moral and sanitary. .

It cannot be denied that much unhealthiness is created in an area newly brought under irrigation. The cause is not far to seek. When a new irrigation system is put into operation, the full extent of land which the system can command is not cultivated at once. It takes some years before the whole area is brought under irrigation. The result is that there is a plethora of water in the new system, and the ryot out of ignorance or laziness allows his land to be deluged with water, with a result which is sometimes not beneficial to crops and nearly always detrimental to health conditions. As the area irrigated approaches the maximum irrigable by the system, by the construction of new distributories, wasteful and excessive watering is checked. Thus though a new system of irrigation may temporarily lower the healthiness of an area, the normal condition of salubrity will recur after a time when the system has reached the limits of legitimate expansion, and when there will be every incentive to economy in the use of water.

The theory that artificial irrigation is the most active agent not only in nourishing epidemics, but also in the generation of those endemic malarial fevers, which are responsible for the major portion of mortality, is misleading, and no proofs of a direct nature based on statistics of irrigated and non-irrigated tracts in the same latitude have been adduced in support of it. Mortality from fever and other endemic diseases is very high during the period of the year in which irrigation takes place, but irrigation in itself is far from being the active agent in causing this high mortality. Vital statistics, relating not only to this Presidency but the whole of India, show that during the dry and hot months of the year the death-rate is low, while during the wet and cold months it is high. This is true equally of districts like Tanjore, Godavery and Kistna, which possess a vast net work of irrigation canals, and of districts in the high and arid regions

of this Presidency, where artificial irrigation is confined to small areas under a few tanks scattered far and wide. It may be stated as an indisputable fact that malaria and fevers of all sorts are less prevalent in the tracts in which there is extensive irrigation than in the comparatively less irrigated areas. The primary cause of fevers are certain unhygienic conditions which are the accompaniments of the wet and cold season. The petty agriculturists and the field labourers in India are perhaps the most improvident of men of their class in the world. In normal times they have little more than what will suffice for bare livelihood. If a good season and a bumper crop bring him an income above the ordinary, he looks upon it as a windfall which must be spent in ceremonies and pilgrimages. The time of the year in which he has most money is the end of the cultivation season. His improvident ways reduce his means to a bare modicum before the next cultivation season arrives. It thus happens that during the cold and rainy season, when his physical activities are the greatest and the rigours of the season demand more food and clothing, he is least able to provide himself with them. His house, which is rarely more than a mud-walled, mud-plastered and thatch-roofed structure, becomes wet and damp inside and out. The rains also wash all the surface impurities, accumulated during a long dry season, into the sources of drinking water supplies like canals, tanks, and even into wells either directly or by percolation. The records of the chemical and bacteriological analyses of the water of the Red Hills Lake which supplies the City of Madras, show that the water is most impure during and immediately after the rains. As the hot weather advances the water gets less and less impure owing to sedimentation and subsidence of the grosser impurities. These are the factors which contribute to the unhealthiness of the rainy season. All the unhealthiness which is coincident with the irrigation season is caused by certain conditions, adverse to health, engendered by wet and cold, accentuated by a lower standard of living which reaches

its low water-mark during the rainy season. The irrigation season synchronises with the rainy season and the period immediately following it, and sanitarians who have made only a superficial study of the question have precipitately come to the conclusion that all the ills which flesh is heir to during this period are attributable to irrigation. "A crow sat on the tree and the fruit fell down" is a significant and apt Indian adage.

There is one incalculable boon which irrigation works have conferred on the areas served by them, which has hardly received the prominence it deserves from the advocates of the expansion of irrigation in India. Wherever irrigation canals and tanks exist, they also form the main drinking water sources of the neighbouring villages and towns. In a large majority of irrigation tanks the issue of water for irrigation is suspended when the water falls to a certain height and the balance is reserved for domestic purposes. Even where independent tanks exist for the storage of water for human consumption, the tanks are replenished from some irrigation canal or tank. With the advent of British rule in India the equipment of water-supplies with independent sources for the use of the larger towns commenced. The aggregate population which enjoys the benefit of such water supplies is, however, a mere iota of the larger number which still depends for the chief essential of life on irrigation canals and tanks. In the existing monetary condition of India the bulk of the people must continue to depend upon irrigation works for their drinking water-supplies. Some of the canal systems and tanks in India are of great antiquity, dating from the dawn of the Christian era—some of these ancient works are of great magnitude and their number is large. The older *regimes* in this country planned and carried out these works thus early and on such an extensive scale, doubtless because they realized that they were as necessary for providing water for the consumption of the people as they were for cultivation. Canal and tank water has a deservedly higher reputation than well

water in India. It is said that bad water kills more people than famines. The beneficial effects of irrigation works on the health and well-being of the people is inestimable.

Scope for Municipal Activity Pending Town-Planning Legislation.*

[By THOMAS ADAMS, TOWN-PLANNING ADVISER TO THE
COMMISSION OF CONSERVATION, CANADA.]

IN an article in the March number of the *American City* I stated that the preparation of town-planning schemes should be preceded by legislation. I do not mean by this that there is no preparatory work that can profitably be done by municipalities or bodies of citizens interested in the planning of their cities prior to the passing of legislation. But I think that it is limited to a comparatively small, although very important, field.

It is not desirable that municipalities or commissions representing groups of municipalities should prepare comprehensive plans without first obtaining authority to control, *during the time the scheme is being prepared*, the area proposed to be planned. Power for this purpose is necessary, whether it be obtained by a special Act to meet the particular case or by a general Act for a whole state or province. Many cities have had town-planning reports and plans prepared at considerable cost and have been disappointed to find, after the work was done, that it was almost impossible to put the proposals into practice. This may have been due, not to any defect in the proposals themselves, but to the fact that the schemes were prepared without the Municipality first having obtained power to carry them out and without regard having been paid to the cost and how it could be met. When the right steps are taken and the right order of procedure is followed, it is quite practicable to settle the financial details of the scheme during its preparation, and it has to be borne in mind that every scheme must be capable of being tested from the point

* From the *American City*.

of view of its economic soundness. It is not a question of sacrificing ideals or principles; that result need not follow, and, besides, it is a separate matter. It is a question of the simple necessity in a democratic country of justifying whatever proposals are made on their feasibility from a financial standpoint. To accomplish the above aim it is necessary that all town-planning schemes, when prepared, should be accompanied by the estimates of the cost of carrying them out. This means that the process of preparing a scheme has to proceed on certain definite lines in conformity with legal practice, and that the co-operation of owners of land has to be sought before and not after the scheme is made. Moreover, it requires that owners shall not have the power to defeat or contravene a scheme while it is in course of preparation.

Four stages of procedure.

The preparation of a practical scheme along these lines involves four stages of procedure as follows :—

1. Preliminary survey to determine the area to be planned and to obtain a map of existing sociological and physical conditions.
2. Obtaining authority to control the area during preparation of the scheme, so as to prevent anything being done to contravene it or any speculation in values likely to be created by it.
3. Preparing the schemes and getting approval by or on behalf of the legislature.
4. Operating the scheme after it has been approved.

In democratic countries, such as the United States or Canada, it is necessary to proceed in the above order, *and only the first stage can be effectually carried out without legislation.* The scope for municipal activity pending the passing of legislation is therefore practically limited to preparing a preliminary survey and map of existing conditions.

The kind of map needed.

The preparation of such survey and map is urgent and of great importance. The customary blue-print showing the streets and sub-divisions, not even differentiating between portions built upon and vacant land, is of little value for town-planning purposes. The need is for a printed map showing accurately the following details :

1. Existing and approved streets, foot-paths and fences ; differentiating between those streets actually formed or made and those which have simply approved by the local authority.
2. Buildings erected and in course of erection ; distinguishing between public buildings, factories, residences, etc.
3. Railways, canals and other artificial features.
4. Lakes, streams, marshy land, groups of trees and other natural features.

In short, what is required is a map showing the existing development and general physical character of the area, in the same way as this is shown on the ordnance survey maps in Great Britain. The need for such maps for United States and Canadian cities and their environs is all the greater because of the extent to which land has been sub-divided beyond the limits of the built-upon areas of most cities.

With regard to levels, all that is necessary on the preliminary survey map is to show spot levels at frequent intervals along the existing roads, or perhaps along streams and on high elevations. Contour maps showing precise intervals of level every 5, 10, 25 or more feet are not necessary at this stage, although in undulating areas they will be required when the scheme comes to be prepared. On the whole, it ~~will~~ be more economical to prepare them in the first stage if sufficient funds are available for the purpose. This is a matter which will have to be decided according to local circumstance. When the preliminary survey is completed, copies of the map might usefully be employed to show the distribution of population and of industries and the traffic

conditions of the city. All that is work which can be profitably carried out without danger, in advance of legislation, *but to go further is to jeopardise any scheme which it is proposed to prepare.*

For town-planning schemes and for general use, apart from precise engineering purposes, it would suffice if the maps were prepared on a scale of 200 feet to one inch, as in the case of the Cincinnati survey, so that a comparatively large town could be placed on a map of workable size; but for many purposes a scale of 400 feet to one inch, as has been followed in the case of the Baltimore survey, would be more useful. The small scale map of part of the suburbs of Edinburgh, Scotland—380 feet to one inch—is a useful map for many purposes, but is not large enough to enable precise areas to be fixed. But even on this small scale, the British maps almost give an accurate idea of the character of a district. One of the difficulties in connection with the preparation of such maps is that they require the services of men of special engineering training and experience, and they can be prepared economically only if the work is supervised by some one who has done similar work before. For this reason it would be a great advantage if some practical means were found to enable the departments of the Federal and Dominion Governments which are engaged in preparing survey maps to give assistance to Municipalities on terms to be mutually arranged. The work could be made to a large extent revenue-producing and would be a good investment. In the absence of such assistance, the expert help of landscape architects and engineers should be obtained.

A Symposium Suggested.

As the points raised in this article cast some doubt on the practical utility of the methods pursued by numerous town-planning commissions which have gone to the expense of preparing elaborate town-planning schemes without first obtaining legislation to carry them out, it might be interesting

to secure a symposium of opinion on the subject. So many excellent reports and schemes have been prepared that the time seems to have arrived for obtaining a collection of views as to the extent to which such schemes have been carried into execution, or the extent to which there has been failure to make them operative, either for the reasons I have indicated or others.

Town-Planning in Rural Districts.

[BY W. B. PINDAR, CLERK TO THE HUNSLET RURAL
DISTRICT COUNCIL.]

THE obstacles to the preparation of satisfactory town-planning schemes are fewer in rural districts than in urban districts and boroughs. There are not so many existing buildings to interfere with the general design, and the surveyor has, therefore, a comparatively free hand. Where road widenings and improvements are necessary or desirable, they can be carried out at the minimum cost when the land is not already appropriated to buildings, and this is an important factor in all town-planning schemes. The number of owners, and particularly of small owners, to be dealt with is generally not so great and there is consequently less difficulty in harmonising conflicting interests. Rural councils have an opportunity of taking time by the forelock which urban districts, owing to their greater development, have lost, and a greater activity on their part in the administration of Part II of the Housing, Town-Planning, &c., Act while the conditions remain favourable would be amply repaid in the years to come. There is, moreover, a definite duty laid upon rural district councils, equally with councils of more populous areas, to take the matter into their careful consideration, and section 61 of the Act empowers the Local Government Board to make an order on the local authority requiring them to prepare and submit a scheme for approval, if the Board are satisfied that such a scheme ought to be made.

General objects of the scheme.

The general object of a town-planning scheme is defined in the Act to be the securing of proper sanitary conditions, amenity and convenience in connection with the laying out and use of the land and of any neighbouring lands. It is essentially a measure for promoting and safeguarding the public health, and its administration has been placed in the hands of the sanitary authorities. A scheme may be made as respects any land which is in course of development or appears likely to be used for building purposes, and wherever there is a scarcity of houses or a demand for the provision of new houses, either by the local authority or by private enterprise, we have a *prima facie* case for the preparation of a town-planning scheme. Apart from such a scheme there is absolutely no power in the hands of the district council to control the lines on which their area may be developed, to prevent a pleasant residential district being spoiled by the erection of workshops or factories adjacent thereto, to avoid the destruction of natural objects of beauty which lend an attraction to the place, or to secure that the streets and roads shall be laid out in such a way as to meet the general convenience of the community instead of the immediate interests of the individual owner. It ought to be impossible to find a house in the country without a decent garden; yet we often meet with villages where the houses are clustered in a row fronting directly on to the road and with no accommodation at the rear beyond the small back-yard. What is wanted is that every resident should have a home in the place, and not merely a house in which to eat and sleep. To secure this, the houses should be placed as far as possible in pleasant surroundings with plenty of open space.

Defining the area of schemes.

The preparation of town-planning schemes is a work which may appropriately be carried on at the present time when so many other works are held in abeyance. The cost of the actual preparation of the scheme is not very great, and the fact that the building trade is almost at a standstill owing

to war renders it all the more desirable that schemes should be taken in hand now, so that when we return to normal conditions and there is a general renewal of activity it may be directed on right lines. It must be remembered that a satisfactory scheme cannot be carried through in a hurry and that a considerable period, amounting probably to at least two years, must elapse between its initial and its concluding stages. When it has been resolved to prepare a scheme, the first important question to be decided is the area to which the scheme shall apply. This is a question which each council will have to determine for itself, as circumstances vary largely in different localities; but, speaking generally, it is advisable not to make the area too small, since there is little difference between the cost of preparing a scheme for a small area and a large one. Frequently it will be advisable to include land in the area of an adjoining authority, particularly where the road forms the boundary between the two districts. A road is considered a bad boundary for a town-planning scheme, and whenever there is a road on the boundary of the area selected to be dealt with, a good building depth on the opposite side, say not less than 150 feet, should be included. One reason is that it is important to have the whole road under control for widening and general development purposes, and another is that the amenity of the area controlled by a scheme on one side of the road may be entirely spoilt by the crowding together of buildings on the other side which is free from any restrictions. When the area has been determined, one of the first considerations, and probably the most important of all in rural town-planning schemes will be to settle the lines of the principal roads to be constructed as part of the scheme and their width. From an owner's point of view it must be a great advantage to have it settled beforehand what roads are intended to be made, and from a ratepayer's point of view it is obviously better to have the roads made of an adequate width in the first instance, rather than to incur the very heavy expense of widening them later.

Heavy traffic problems.

Owing to the advent of the motor car and the enormous development of both fast and heavy traffic on our highways, the future standard of road construction, so far as through roads are concerned with regard to both strength and width will have to be considerably enlarged. Many road widenings have already been undertaken in rural districts, and considerable sums of money have still to be expended in rounding off ugly corners in order to increase the safety of the traffic.

Provision of open spaces.

The provision of a sufficient number of open spaces to be used as recreation grounds will form an essential part of the scheme. Just as the town needs its park, the village requires its play-ground. The play-grounds must be arranged so as to be convenient to the houses and not too far away or the children will not use them, but will continue to play about the streets to the danger both of themselves and users of the roads. Other open spaces will be required for cultivation as allotments, no buildings being allowed to be erected on them other than green-houses, summerhouses, etc. The need for the limitation of the number of houses to the acre appears to be quite as great in rural districts as in the towns. There are many rural areas where the houses in the centre of the village are crowded together at the rate of 40 or more to the acre, as though the land were more valuable than in the heart of London. Special areas may also be reserved for certain classes of buildings, and provision made to prevent the spoiling of good residential districts by the erection therein of shops, warehouses or factories. The limitation of the number of houses to the acre is always one of the most important features of any scheme. Here again, circumstances vary so much in different localities that it is impossible to set up any fixed standard. The number of houses permitted in a residential area, for instance, would not be so large as in an industrial district. Each council must be the judge of

what is most suitable for its own area, but it is now largely agreed that the maximum number of houses of any class allowed on any one acre should not exceed twenty.

Claims for Damages.

Generally, it will be possible in rural districts to design schemes which will not involve the local authority in serious claims for damages, and on the other hand where any property is increased in value by the making of the scheme the council may recover one-half of such increase from the owner. In my opinion the most prudent course a council could adopt would be to consult an experienced surveyor at the outset, as by so doing, they will avoid many difficulties which would otherwise beset them. In conclusion I feel that I cannot do better than quote the words of the Board's circular on the Act issued on the 31st December, 1909, in which they say that "the Board trust that councils in whose districts signs of development are visible will give very full consideration to the opportunities which the Act offers of guiding and controlling that development for the benefit of the community, and that in so doing they will bear in mind the heavy burden which has fallen on the ratepayers of many districts in the past in remedying defects of the kind which it is now within their power to prevent."

The Control and Treatment of Tuberculosis in Bombay.*

[By DR. J. A. TURNER, M.D., D.P.H., EXECUTIVE
HEALTH OFFICER.]

IN dealing with this question it will be of interest to review the history of the subject as dealt with by the Health Department in Bombay.

At the General Meeting of the British Congress on Tuberculosis for the prevention of consumption, held in July 1901, certain Resolutions were passed, and the Corporation appoint-

* Being a Report made to the Corporation.

ed a Committee "to consider the subject in consultation with the Commissioner and the Health Officer and to frame such measures as may be desirable and possible for the purpose of checking Tubercular disease amongst all classes of the population of the City of Bombay."

The Executive Health Officer was asked to submit, for being placed before the Committee, a memorandum of suggestions, arranged in order of importance, showing the practical measures that might be taken for the prevention of the disease (*vide* Commissioner's No. 24786 of 12th December 1901).

Accordingly, I forwarded the following list under No. 16642 of 12th February, 1902:—

1. Voluntary notification by medical men to the Health Officer of every case of tuberculosis coming to their knowledge.
2. Facilities to be given for a bacteriological examination of sputum sent by medical men to the Health Officer to ascertain whether tubercular bacilli are present.
3. Instructions to be given how to disinfect a room in which a case of tuberculosis has occurred and died.
4. Instructions to be given how to disinfect sputum and to prevent the bacilli spreading the disease.
5. Disinfection and lime-washing of every infected house at Municipal expense, where necessary, in the opinion of the Health Officer, and systematic lime-washing of every common lodging-house twice a year at owner's expense.
6. Printed instructions in English and the Vernaculars to the people, and instructions by male and female visitors as to the precautions necessary to prevent the spread of disease and notices posted as to spitting.
7. Prevention of over-crowding in houses, factories and workshops.
8. Ventilation of houses, Printing Offices and Workshops, and removal of dust from wool and cotton cleaning godowns and all trade processes causing pollution of air liable to affect the lungs and predispose to infection.

9. Provision of sanatoria for isolating and treating cases of Tuberculosis.

10. Inspection of milk and meat supplies and analysis of milk.

The suggestions, along with the Committee's Report, were approved and adopted, and a copy forwarded to the Commissioner and the Health Officer for guidance. (Corporation Resolution No. 922 of 5th May, 1902.)

In October, 1902, the Government of Bombay issued a Resolution (No. 5570, General Department, of 9th October, 1902) publishing the remarks of the Government of India on the Resolutions passed on the subject of Tuberculosis by the British Congress and requested the Municipal Commissioner, Bombay, to take such action as may be deemed necessary with reference to the suggestion in paragraph 3 of the letter from the Government of India :—

“In the 5th Resolution the Congress have also suggested that medical officers of health should use all their powers to prevent the spread of tuberculosis by means of milk and meat. This suggestion is of importance mainly in municipal areas, where some Officer of the Municipal body usually has power to inspect materials of food and drink.”

As the re-organisation of the Health Department was under consideration, I suggested, long before the issue of the Resolution, the establishment of a properly equipped Municipal Laboratory and the appointment of a Municipal Analyst for the examination of milk, ghee and other articles of food.

The Laboratory was established and the City Analyst was appointed in April, 1903.

I suggested also the appointment of Food Inspectors and the necessary amendments of the Municipal Act (Annual Report for 1903).

In 1903 I submitted a report on the milk supply of Bombay, and made several suggestions for providing a certified milk supply.

Fresh proposals on the subject were submitted in 1904 at the request of the Corporation. (Annual Reports for 1904 and 1905).

In my Annual Report for 1908, I referred to the measures suggested by me in 1902 for the prevention of Tuberculosis and pointed out how the adoption of those precautionary measures appeared to have borne some fruit in the large number of notifications received every year and the steady decline in the annual mortality from the disease. In 1902, the mortality from the disease stood at 3,957 (5·09 per 1,000 of population); it fell to 3,567 in 1906, (3·61), 2,877 in 1907 (2·94) and 2,387 in 1908 (2·44).

In 1910 investigations were carried on by this Department into the subject of infected or tuberculous milk and sputum and the results were embodied in my report published in 1911 on "How Tuberculosis is spread in India."

Leaflets on the precautions to be taken are distributed, and lectures given. The Municipal District Nurses and the Health Visitors of the Bombay Sanitary Association make frequent visits to houses and advise the parents and relatives.

The question has been before the Corporation on several occasions (See report of the Committee, 1902) and certain recommendations were made.

The disease has been notifiable in Bombay since 1903, though the number of cases notified by medical men is small compared with the number of cases occurring.

In my report on "How Tuberculosis is spread in India," 1911, I dealt with a large series of experiments on sputum and the question of the part played by milk in the spread of

Tuberculosis in India, and made the following suggestions as to the control of the disease :—

Public precautions—Municipal and State.

To thoroughly undertake the work of controlling and exterminating Tuberculosis in a community, much time, trouble, and energy is required with a perfect organisation and thorough control and suitable bye-laws and regulations. A perfect routine system will have to be followed beginning with compulsory notification of every case by the Medical man in charge or by direct inquiry by a special Qualified Medical Staff, male and female, also by Health Visitors and Nurses.

Circular notices and printed precautions will have to be freely distributed, and thorough disinfection of rooms, clothing, &c., in which a case has occurred.

On receipt of a notification or information of a case or a certificate of death from phthisis, or as the result of examination of sputum sent to the Laboratory, the Sanitary Officer visits the house, making inquiries into the duration of the cases and its surroundings. Instructions are given, printed and oral, and the case, if possible, removed to the Hospital for Consumption.

He then proceeds to disinfect the room and bedding. Esmarch process of rubbing the walls with dough to collect the infected dust may be adopted in suitable houses, but would not be practicable in all Indian dwellings.

Two per cent. Solution of Chloride of Lime or Izal, 1-30, may be used for washing the floor, walls, and ceilings.

The furniture should be washed with a damp cloth soaked in Izal and the linen soaked in Carbolic Acid.

The walls, ceiling and floors should be rubbed over with dough to collect the dust, and the dough afterwards burnt; on no account should the room be swept with a brush or duster as the infected material may be dispersed in the air and may be inhaled by the operatives.

The floors, walls, and ceilings should be treated with Formalin Spray or with Chloride of Lime $1\frac{1}{2}$ oz. to a gallon of water or Izal 1-50.

The linen and bedding should be passed through a steam sterilizer.

A room occupied by a phthisical patient should be thus treated every 6 months.

Regular forms should be kept, and a register made of all cases visited and the action taken.

Municipal.

Improvements in dwellings, Town Planning and ventilation of houses and areas.

Hospital accommodation, Sanatoria and Consumption Dispensaries should be provided.

In all countries these Institutions are provided by the Municipalities, State or charitable persons and privately.

Inspection of meat and milk, dairies, cowsheds, slaughter-houses and of the over-crowding of workshops and factories should be systematically carried out.

Under the Heading of Inspection of food and milk, these matters are dealt with.

All milch cattle should be tested with Tuberculin, and legislation adopted for compensation and slaughter of infected animals.

(1) Compulsory notification of births within 24 hours.

(2) Complete control of the milk supply by the State, ensuring the removal of dairies from the centres of large towns and cities; cleanliness in the collection of milk and the transmission of it from the dairy to the consumer; the application of the Tuberculin test to dairy cattle and the removal of such as react to the test.

(3) Medical inspection of school children and school premises, factories, workshops and infected houses by medical men and Health Visitors to ensure sufficient hygienic measures and sanitary arrangements.

(4) Housing reform, thus raising the social and domestic conditions of the poor.

(5) Segregation in Hospital of advanced cases and public and private Sanatoria.

(6) Compulsory notification of the disease.

The investigation carried on by this Department was the first investigation into the subject in India, and I advised further inquiry.

I came to the conclusion that, so far as these experiments have shown, Tuberculosis in cattle is rare in Bombay.

I pointed out that the subject was worth considering further, but with the pressure of work this was impossible in the Health Department of the Municipality; and suggested that it be taken up by the Parel Laboratory to whom I would give all assistance possible.

The results of my investigation were :—

(1) That cattle in Bombay and presumably other parts of India do suffer from Tuberculosis to a slight extent.

(2) That it is possible to infect milk by human agency owing to the habits and customs of the attendants and the method of distributing milk.

(3) That a possible source of infection is the fæces of infected cattle due to the intimate connection there is between the labouring class and the cattle and the enormous use made of cow-dung in the houses and surroundings.

Later on, Major Gloster, I.M.S., carried out at the Parel Laboratory the examination of 100 samples of single cow's milks in Bombay for Tubercle bacilli by animal tests and in no case were the guinea pigs found to have developed Tuberculosis.

For many years, the City of Bombay was passing through a series of epidemics of plague, small-pox, cholera and malaria, and the energies and resources of the Health Department were taxed to the utmost, as during these years the various re-organisation and re-arrangements of the Health Department to a certain extent handicapped its efforts towards measures for the control of Tubercular and other diseases and it was impossible to deal on a large scale with the particular subject which has only recently been so fully developed in England.

The wave of Anti-Tubercular measures, which spread all over the world during the past few years, reached India : and in (February) 1912, Mr. Ratan Tata offered to contribute very handsomely to a scheme for the control of Tuberculosis, which offer was published in the Press (March). Mr. Ratan Tata's proposal was laid before His Excellency the Governor—Lord Sydenham—who informed me that the question was engaging the attention of Government and he called a meeting of the Medical Profession to consider how best a Scheme could be worked.

I was requested to draw up a Scheme, which I did, and His Excellency called a public meeting (3rd April, 1912) at the Town Hall, at which he spoke on the question and my Scheme was submitted and many of those present—medical men and citizens of Bombay—spoke in support of the Scheme.

The result of that meeting was The King George V Anti-Tuberculosis League, and an Executive Committee was formed and the Executive Health Officer and Dr. N. H. Choksey, Special Assistant to Health Officer for Infectious Diseases, were appointed Honorary Secretaries.

The Scheme formulated was adopted and has now been working nearly three years. A Tuberculosis Dispensary with a Medical Officer and Nurse was established and has been working satisfactorily. The Government of Bombay, the Municipality and private individuals contributed.

Mr. Tata disappointed at the Scheme not receiving the financial support from Government, Municipality and Millowners and other employers of labour he anticipated, reduced his subscription to Rs. (5,000) and now states that he is not prepared to continue it.

So far the work of the League has been solely in the City of Bombay : the only work done outside by the League was the offering of advice to Municipalities in the Presidency and sending copies of literature on the subject.

Although the scheme was meant for the improvement of the health of the people in the City and to create an interest in the Presidency, many members of the Corporation strongly objected to the Health Officer taking part as an Honorary worker in a scheme fraught with such importance to the health of the City and in a work so intimately connected with sanitary administration and the relief of sickness in Bombay.

The Anti-Tuberculosis League is attempting by voluntary effort, with the assistance of the Health Officer and his Assistant as Honorary Secretaries to organise, supervise and control without remuneration, the work which is done in other Cities of the civilised world by specially highly paid Officials employed by Municipalities, County Councils and other Local Authorities.

As the League had started the work, I did not think it advisable to lay a separate scheme before the Corporation until we saw how things were going.

The Anti-Tuberculosis League is managed by a Committee of prominent medical men and citizens of Bombay, many being members of the Corporation.

The first step taken was to start a dispensary and employ a special staff and organise a series of lectures and visits to the infected houses. It was soon found that to enable it to be of greater benefit to the citizens, beds should be provided whither

cases coming to the knowledge of the Tuberculosis office could be removed so as to treat them and prevent their becoming a danger to their relatives and others.

At the suggestion of the Honorary Secretaries, who being the Chief Officers of the Health Department, are intimately in touch with the existence of the disease and well acquainted with the requirements of the people, a proposal was made to the Corporation to allow, as an experiment, the empty Wards at the Maratha Hospital to be used for the purpose: the Corporation bearing the cost out of the grant for Infectious Diseases, as the Wards were no longer required for plague—that disease having been reduced to almost a negligible quantity for the greater part of the year.

The suggestion was a modest one, as an experiment, to ascertain how far such accommodation would be acceptable to Indian patients; the cost was small, as it was money saved by the reduction of other infectious diseases.

The request of the Anti-Tuberculosis League was, however, rejected by the Corporation.

We are, therefore, now in this position: the Anti-Tuberculosis League cannot, for lack of funds, continue to carry out a complete campaign to anything like the extent it hoped. With one dispensary and no hospital, very little can be done.

It will be seen that the question of the prevention of Tuberculosis has not been neglected but has been dealt with by the Health Department prior to the date when the control of the disease became so prominent a factor in Public Health Administration in England.

To compare the measures in force in Western Countries and those in India is not of much value for the present purpose but as a guide to the importance attached to the prevention of Tuberculosis, they may be stated.

In England, the Public Health (Tuberculosis) Regulations, 1908, provide for the notification, within 48 hours, of Tuberculosis of the Lungs, occurring in any person, either an

inmate of a Poor Law Institution or in receipt of out-door Poor Law relief. They also provide that the Medical Officer of Health is to be informed, when the patient is discharged from hospital, of his actual or intended place of destination; and also any change of address by the Relieving Officer.

The Public Health (Tuberculosis in Hospitals) Regulations, which came into force on the 1st May, 1911, extend notification to cases under treatment in Hospitals generally including Dispensaries.

The Public Health (Tuberculosis) Regulations, 1911, came into operation on the 1st January, 1912, and provide for the compulsory notification, by the Medical Practitioner, of all cases of Pulmonary Tuberculosis, provided that the Medical Practitioner need not notify any case of Pulmonary Tuberculosis that has been previously notified under the Poor Law Regulations or under the the Hospital Regulations.

On receipt of the notification, the home of the patient is visited, and full enquiries made into the history of the case; the condition of the home, habits of the people, and the general sanitary arrangements of the premises are also reported upon. An instruction card, containing "information for Consumptive People and those who live with them," is freely circulated, and, if necessary, full explanation is given. Disinfection of the house and bedding follows, and if the patient remains at home, the premises are also periodically disinfected.

An officer of the Sanitary Staff subsequently revisits the home, and, if necessary, advises the patient as to the need for absolute cleanliness, free ventilation of the rooms, and care in dealing with the expectoration, and notes that the general instructions embodied in the instruction card are being followed.

Administrative control of Tuberculosis in England.

The year 1912-1913 will always stand out as a landmark in the history of the administrative control of Tuberculosis in

England. During this year the Local Government Board made all the forms of Tuberculosis compulsorily notifiable; the provisions of the National Insurance Act, 1911, as to sanatorium benefit came into operation.

The capital grant under the Finance Act, 1911, of 1½ million pounds sterling for the provision of institutions for the treatment of Tuberculosis in the United Kingdom became available; and the important offer was made by the Treasury to defray one half of the annual cost of Schemes for the treatment of Tuberculosis, proposed by Local Authorities and approved by the Local Government Board, which are available for the entire population, after deducting any contribution received from the Local Insurance Committee or from other sources. These sums were, of course, to be provided from the taxation specially imposed.

Through these measures and the administrative arrangements made in connection with them, a more complete control over Tuberculosis than was previously possible is being organised, both by treatment and by allied preventive measures.

Tuberculosis Officers.

In nearly all areas, the Medical Officer of Health of the county borough or administrative county has been appointed as administrative Tuberculosis officer in charge of the organisation of the Scheme. One or more clinical Tuberculosis officers have been appointed in charge of the clinical side of the work of the local authority. In a few smaller counties and county boroughs the Medical Officer of Health has been appointed clinical as well as administrative officer, when there has been satisfactory evidence that he has had special clinical experience in the treatment of tuberculosis. In some instances, assistance in the clinical work has been needed, and in some county boroughs an officer who is assisted by a medical officer of health and assistant tuberculosis officer has been appointed. In other instances, chiefly in sparsely populated counties, officers who have special experience of tuberculosis have been appointed who combine the functions of assistant tuberculosis officer and school medical inspector.

Dispensaries.

In some instances, the county borough council or the county council, or in London the metropolitan borough council, has contracted with a voluntary association or with the committee of a general or special hospital to undertake part or the whole of the dispensary work. The details of the arrangements vary considerably in different cases. In some areas, counties and county boroughs have arranged for the appointment of a joint tuberculosis officer, to serve the county borough and an adjacent part of the county area, payment of salary being arranged according to the time devoted to the work of each authority.

The cost of such provision has varied greatly, being usually higher in county boroughs than in county districts.

The buildings, which are constructed of permanent material, are estimated to cost about £578, exclusive of site and furniture. Of this cost £360 is allocated for the tuberculosis dispensary and £218 for the school clinic. Similar dispensaries combined with school clinics are proposed in the majority of towns in England.

In London, provision of residential accommodation is being provided by the London County Council. This provision will include observation and emergency beds, which should prove of great assistance to the dispensaries. It is considered very desirable to arrange for the admission of patients into these beds direct from dispensaries, or otherwise, with as little formality as possible. It is, moreover, desirable that observation and emergency beds should be closely associated with the dispensary, the dispensary medical officer having access to the patients in them. The extent to which these beds are used, and indirectly much of the value of the beds for dispensary work, will depend upon the closeness of their relationship to the dispensary.

Residential Institutions for the treatment of Pulmonary Tuberculosis.

On July 18th, 1914, the number of institutions and of beds which were approved under Section 16 (1) (a) of the National Insurance Act, 1911, for the treatment of tuberculosis in England exclusive of Monmouth, was as follows:—

1. Provided by county and county borough councils and other sanitary authorities:—

	Number of Institutions.	Number of Beds.
Special institutions (Sanatoria)	20	1,339
Provision at isolation hospitals	57	1,493
„ „ small-pox hospitals	30	1,076
	<hr/> 107	<hr/> 3,908

2. Provided by voluntary associations and by private enterprise.

Special institutions (Sanatoria and consumption hospitals)	84	4,059
General hospitals	35	153
Children's institutions (voluntary)	13	726
	<hr/> 132	<hr/> 4,938

In addition to the above, large number of beds in Poor Law Institutions are employed in the treatment of tuberculosis. Excluding these last-named beds, the accommodation now available in England for the treatment of pulmonary tuberculosis represents one bed for every 3,848 persons (census population).

Further accommodation is in process of being supplied. The Board have approved plans for new buildings to accommodate 2,796 additional patients. These, when provided, will bring up the accommodation in England to one bed for every 2,924 persons. Fifteen sites for new sanatoria and

hospitals have been approved. These institutions when completed will supply 1,672 additional beds, and there will then be one bed for every 2,557 of the census population of 1911.

The medical needs met by these beds can most succinctly be described by using the classification of cases of pulmonary tuberculosis.

Classification of Consumptive Patients.

In considering the provision required for the treatment of tuberculosis patients, it is convenient for statement of the case to have in mind a classification of these patients. The following classification has been arranged from the standpoint of the accommodation needed in residential institutions. It is confined to pulmonary cases.

Group A.—Cases in which permanent improvement or recovery can usually be anticipated.

Group B.—Cases in which only temporary, though possibly prolonged, improvement may be anticipated.

This Group will include—

(1) Patients who may be expected to recover considerable ability to work, as a result of protracted treatment.

(2) Patients admitted for a short term for educational treatment.

(3) Patients with advanced disease, many of whom improve greatly under institutional treatment.

Group C.—Advanced cases requiring continuous medical care and nursing.

Group D.—Cases requiring special observation—

(1) Patients admitted for the purpose of diagnosis.

(2) Patients needing to be watched, before the best form of continued treatment can be determined.

Emergency cases, *e.g.*, patients with hæmoptysis, and patients requiring surgical treatment may come within any of the above groups.

Most of the 4,059 beds in sanatoria and consumption hospitals provided by voluntary association or by private enterprise are intended for patients in Group A; though, owing to the causes indicated, they doubtless contain a considerable proportion of patients in the other groups. It is impossible to state precisely the number of beds available for patients in Group A, and in Groups B, C and D respectively; but it is highly probable that the accommodation for patients in Group A has already reached one bed per 5,000 population, the accommodation recommended by the Departmental Committee on Tuberculosis as immediately advisable.

This accommodation is at present very unevenly distributed, and much of it is at present being utilised for patients coming within Groups B, C and D.

The reports of medical inspectors and of medical officers of health, as well as a consideration of the figures given above, show that much more accommodation than is now available is required for patients in Groups B, C and D. In some towns, *e.g.*, in Sheffield and St. Helens, accommodation for these groups of patients has been provided to an extent exceeding one bed to 5,000 population, the tentative standard set by the Departmental Committee. In these towns, all insured and many non-insured persons requiring treatment in a residential institution can be adequately dealt with, irrespective of the stage of the disease, but additional beds are needed if patients belonging to the population as a whole, including poor-law patients, are to be satisfactorily treated.

The Departmental Committee advised that these beds might be assumed to amount to one bed to 2,500 population, for all stages of adult pulmonary tuberculosis, in addition to poor-law provision. This last in November, 1911, amounted to about 9,000 beds in England and Wales. On this basis the census population of England and Wales implies the need for about 14,428 beds in addition to the 9,000 beds under the poor-law, making a total provision of about one bed per 1,500 population.

It is convenient to compare this estimate with the provision or proposed provision in certain areas. For instance, it is found that at St. Helens (population 98,158) 52 consumptive patients were receiving residential treatment in the borough sanatorium and 34 patients belonging to the borough were in the poor-law infirmary. This present use of beds for pulmonary tuberculosis implies a provision of one bed for every 1,123 persons (census). With this amount of provision, apparently all patients were receiving institutional treatment who needed it. It may be of interest to note that the consumptives under treatment in residential institutions in this St. Helens borough came within the following groups in each institution:—

				Borough Sanatorium.	Poor-law Infirmary.
Group A	...	...	...	9	2
„ B	...	...	...	26	13
„ C	...	...	...	17	19
				<hr/> 52	<hr/> 34
				<hr/>	<hr/>

Two county boroughs, Bradford and Sheffield, have elaborated tuberculosis schemes intended to deal with tuberculosis in *all classes of the population, including poor-law patients*; and the following particulars as to these schemes are important, as a partial guide, to the medical officers of health of other towns.

It should be explained that in each town the number of beds intended to be provided has been decided upon after ascertaining the number of beds needed to replace existing poor-law accommodation *plus* accommodation on the basis of one bed to 2,500 population.

			Bradford	Sheffield.
Population (1911)	...	...	288,458	454,632
Beds to be provided for pulmonary tuberculosis	...	...	252	350
Representing one bed per population	...	...	1,143	1,299

Comparing these different results, it would appear that in many county boroughs something like one bed per 1,200 of population is likely to be needed to meet current requirements for the institutional treatment of pulmonary tuberculosis; but that in administrative counties a smaller number than this may suffice.

Scheme for the Treatment of Tuberculosis.

Before the National Insurance Act came into operation in England, large strides had already been taken by a considerable number of local authorities to secure the treatment of tuberculosis patients in their respective areas. In December 1911, nearly 1,400 beds for consumptives had been provided by sanitary authorities, in addition to the 9,000 beds in poor-law institutions, found to be occupied, in November 1911, by consumptives. At that time also, there were 84 sanatoria in the hands of private persons or voluntary associations, having a total provision of about 4,200 beds, of which 400 were rented by local authorities. The total number of beds then available apart from poor-law institutions was about 5,200. In addition, 14 sanitary authorities had provided tuberculosis dispensaries, and in 50 other districts tuberculosis dispensaries under voluntary management were available.

The two most important findings of the Departmental Committee in England were—

- (1) that any scheme which is to form a basis for the control of tuberculosis should be available for the whole community; and
- (2) that the organisation of schemes throughout the country can best be carried out if undertaken by local authorities.

In their circular of the 14th May, 1912, the Local Government Board expressed their general agreement with the findings of the Committee, as set out in the interim report, and urged all county councils and county borough councils to

proceed to formulate a scheme to provide for the treatment of cases of tuberculosis within their area, and emphasised that—

“In a disease such as tuberculosis, the prevention of infection, and the treatment of the patient must necessarily be placed in the closest relation to each other.”

Residential Institutions.

The residential institutions at which tuberculous patients were being treated prior to the year 1912 in England varied much in type. There were first of all the various general hospitals, the special hospitals for consumption, and the hospitals and convalescent homes for children with tuberculosis, mostly under the control of voluntarily organised committees, at which various forms of medical and surgical tuberculosis were, and continue to be, treated. Next there were the limited number of sanatoria, for the protracted treatment of cases of pulmonary tuberculosis likely to receive permanent benefit from this treatment. Most of these were either under the control of voluntary committees or in private hands. A few were owned by municipalities or poor-law authorities. A large number of consumptives, especially patients with advanced disease, were being treated and now are being treated by poor-law authorities in work-house infirmaries. In addition, a number of sanitary authorities had made provision for the treatment of consumptives at their isolation hospitals in the intervals of epidemics, when a pavilion of the hospital was vacant; or for the similar use of their small-pox hospital when the hospital was not required for small-pox. Lastly, a number of sanatoria, small hospitals and convalescent homes under private ownership and management were in existence when the question of approval by the Board under the National Insurance Act first arose.

Permanent Schemes for the Institutional Treatment of Tuberculosis.

The Local Government Board, in their circular letter of 6th December 1912, made some further observations as to the

organisation of schemes for the institutional treatment of tuberculosis. Subject to the general consideration "*that the organisation of schemes must be undertaken as part of the public health administration of the area to which they relate with the medical officer of health as the chief administrative and supervising officer, the desiderata as to dispensary and residential institutions were set out.*"

Sanatoria and Combined Institutions.

A unit of 100 beds is generally regarded as best adapted to secure a sanatorium which can be well placed and efficiently organised, with due regard to economy of administration. With larger institutions there is some risk of loss of individual knowledge of and influence over patients on the part of the medical superintendent. A unit of 100 beds, on the basis of one bed for 5,000 population for patients in Group A, as recommended by the Departmental Committee on Tuberculosis, should serve a population of 500,000; and, in order to secure such a unit, combinations of authorities for sanatorium provision have been urged by the Board. In some instances such combinations are being formed; in most instances negotiations to this end have involved delay, and have been met by counter-proposals for "self-contained schemes."

In this connection the question has necessarily arisen whether patients in all stages of disease can be satisfactorily treated in the same institution. The "sanatorium" in the sense of an institution for patients in Group A, presents the advantage that it can be remote from large towns, and probably in some respects better situated than a combined institution, *i.e.*, an institution of patients in Groups A, B, C, D. Experience, however, shows that there is no administrative or medical difficulty in treating advanced consumptives in the same institution as patients with earlier disease, provided that the type of sleeping accommodation for patients consists chiefly of rooms for one or two patients or of small wards. With such an arrangement, if a section of the institution

consisting of one or two bedded rooms or small wards is devoted to patients who needed special nursing, irrespective of the stage of disease, it is impossible for the patient with advanced disease to infer the hopeless character of his illness from his place in the institution.

The combined institution belonging to one authority affords the medical and administrative advantage that the tuberculosis officer can, as a rule, watch his patients throughout the whole course of their treatment, both at the sanatorium and the dispensary.

Details as to Residential Institutions.

Site.—The area of land required will depend upon the number of patients and the type of cases. The Departmental Committee recommended a site allowing $\frac{1}{2}$ acre per patient as “a fair allowance, but less may suffice.” It will be noted that this is only a general observation, and a smaller amount of land may properly suffice in the case of sanatorium for a large number of patients.

The site of a sanatorium should be sufficiently large to permit of open air employment of a considerable number of patients. It is desirable that a site of 50 acres in extent should generally be provided for 100 beds, if land is readily available and the price moderate. An area of not less than 20 acres may suffice where suitable land is difficult to obtain or the price is very high. In all cases an area of at least one-fifth of an acre should be allowed per patient. For a hospital, less than this area is permissible.

Floor and Wall Space.—The Board have adopted the rules that sleeping accommodation should provide a floor space of at least 64 square feet for each patient; and that the distance between adjacent beds should not be less than eight feet measured along the wall between the centres of the heads of the beds. In institutions for children the distance between adjoining beds, as thus computed, may be reduced to six feet.

Nursing Staff.—An analysis of the staffing of various sanatoria appears to indicate that, in a large institution, one nurse will generally be adequate for every twelve patients. In a hospital for advanced patients, or in a combined institution, a larger staff may be required.

The Objects of Treatment.

The relative utility of various institutions may be more clearly expressed when they are considered from the standpoint of the intention of the treatment. The object aimed at in most sanatoria has been the cure of the tuberculosis patients; or, when this is impracticable, his recovery to an extent which makes him again a working member of the community.

The majority of patients admitted to a sanatorium improve very considerably, and a large proportion regain what is apparently full health. Similar results, in many instances, are difficult to obtain under the social conditions and conditions of treatment at the patient's own home. It is recognised, however, that a considerable proportion of patients discharged from a sanatorium with full working capacity will relapse and die within the next few years; and in estimating the economic value of sanatorium treatment, information as to the frequency with which health is permanently maintained will need to be obtained. A number of statistics have been published on this point in this and other countries; but these statistics are not altogether satisfactory in character, owing to the difficulty of securing the after-history of patients, the consequent paucity of data, or the absence of exact comparability of diagnosis and of records.

In all Cities in England, a special staff for Tuberculosis is employed under the Health Officer.

Manchester.—Population 731,556.

The control of Tuberculosis has been undertaken by the Municipality for many years.

The scheme at present working is carried out by the Health Department and consists of—

Chief Medical Officer of Health.

1 Senior Tuberculosis Officer, salary : £500 per annum.

1 Assistant „ „ „ „ 300 „

1 „ „ „ „ 300 „

3 Clerks.

7 trained Inquiring Officers.

Part services of 28 Sanitary Inspectors and 18 Health Visitors.

8 Subordinate Clerks.

8 Nurses.

Institutional Treatment.—Dispensaries and four Sanatoria providing 476 beds.

The amount spent in Manchester is £84,000 (Rs. 12,60,000) for combating Tuberculosis.

£33,652 (Rs. 5,00,000) or about half is contributed by Government and the Insurance Committee.

Liverpool.—Population 756,553. 500 beds provided for tuberculosis, 3 Tuberculous Institutes or Dispensaries.

Staff.—The whole of the staff of the Public Health Department may be regarded as directly concerned with the preventive administration of tuberculosis. All improvements in housing, the provision of open spaces, purity of milk and water supply, etc., have contributed to the decline of tuberculosis, and there is every need for such activity to continue with unabated vigour if it be desired to exterminate the disease.

A section of the Health Officer's staff is specially organised to cope with the various administrative and clinical details incidental to the work.

A special Assistant to the Health Officer has devoted his whole time to tuberculosis since 1910.

At the close of the year the following medical staff was engaged in the tuberculosis work of the Corporation :—

The Medical Officer of Health (Chief Tuberculosis Officer).

One Assistant to the Medical Officer of Health (Acting Chief Tuberculosis Officer).

Two Assistant Tuberculosis Officers (one further appointment to be made).

In addition to the above, two clerks were provided for the Assistant to the Medical Officer, while each Assistant Tuberculosis Officer was provided with a clerk, nurse and porter, in connection with his respective Tuberculosis Institute.

Birmingham.—Population 859,644. 409 beds provided for tuberculosis, 2 Tuberculosis Dispensaries. 9 Tuberculosis Medical Officers. Cost £31,700 per annum.

The Degree of Reliability of Local Tuberculosis Statistics.

In order to learn the causes of variations in the incidence of a disease upon communities, any set of figures intended to measure this incidence must in particular be free from the fallacies due to migration of patients, whereby an infection may be acquired in one district and be chronicled as disease or death in the statistics of another. For this reason, among others, local statistics have to be handled with caution even when they concern acute infectious disease of only a few week's duration. Tuberculosis is not only an infectious, but also a chronic disease, which on the average probably extends over years and often escapes recognition during a large part of the time. Fallacy is almost inevitable in such a case if inferences as to causation are sought from individual groups of local statistics.

Scheme for Bombay.

In Bombay City, we have now arrived at a period when the more acutely infectious diseases such as plague, small-pox, cholera, malaria, do not require so much of our attention and

when the health of the City is gradually approaching western conditions and the mortality from all diseases has been considerably reduced and we can turn our attention to dealing with diseases, which although not so acutely infectious and fatal as plague, small-pox, cholera, are the cause of much sickness and suffering.

Two such diseases, common to all countries, are tuberculosis and venereal disease.

I propose to deal with tuberculosis first.

Tubercle of the lungs is an infective disease, though not in the same way as scarlet fever, small-pox or measles, etc., and is conveyed from person to person when in close contact, as in over-crowded houses, sleeping in the same room with suffering cases.

We must also accept the fact that pulmonary tuberculosis is prevalent in India, especially in towns; but a vast improvement could be made with properly organised measures.

This being so, it becomes the duty of Government and the Municipalities to control and treat the disease.

This is recognised throughout the entire civilised world, and an enormous amount of labour and money is being spent by local authorities in this direction.

In English towns and counties of England and America and Australia, schemes have been organised to control this disease and the results can be seen from the figures below:—

Pulmonary Tuberculosis.—Death-rate per 1,000 living.

Cities.	1881-85.	1901-05.	1912.
London ...	2'22	1'60	1'35
Edinburgh ...	2'12	1'61	1'08
Glasgow ..	3'11	1'76	1'31
Dublin ...	3'46	3'09	2'45
Belfast ...	3'82	3'07	2'05
Melbourne ...	2'33	1'39	1'04

Toronto ...	...	2'03	1'74	.....
Paris ...	...	4'41	3'90	3'32
Amsterdam ...	...	2'38	1'44	1'22
Copenhagen ...	...	2'73	1'44	1'37
Petrograd ...	...	5'49	3'12	2'87
Moscow ...	...	4'11	2'68	2'44
Berlin ...	...	3'39	2'26	1'68
Leipzig ...	...	3'70	1'93	1'59
Vienna ...	...	6'85	3'36	2'37
Milan ..	...	3'35	2'32	1'69
Venice ...	...	3'06	2'00	2'16
New York ...	...	3'98	2'15	1'70
Chicago ...	...	1'80	1'52	1'44
Buenos Aires ...	...	2'70	1'84	1'66
Bombay ...	...	3'64	4'85	2'22
Calcutta...	...	.....	6'52	2' 1
Madras ...	...	.....	.....	1'13

The different conditions existing in India make it necessary to adopt measures which will appeal to the people, first by instructing them in the measures necessary for the control of tuberculosis, and give them confidence in the methods to be followed. It is not necessary to unduly magnify the existence of the disease; it is well recognised by the most illiterate that such a scourge exists. From researches carried out by the Health Officer in Bombay, verified by the Parel Laboratory, tuberculosis in cattle is rare in India, so that we have fewer dangers to face. We want therefore not to rush into extremes but to offer practical help and guidance and encourage those, to whom modern methods are strange, to realise and appreciate the facilities given. It cannot be denied that the condition of life of many people in India, especially in towns, predispose to the spread of the disease by contact and hereditary tendency.

The main principles of prevention and treatment are the same in whatever country they are practised.

1. Educational—where the people can be approached by the health visitors and others with a view to explaining the nature of the disease, the value of treatment and the facilities given for preventing it.

2. The Dispensary—where patients come for advice and treatment in the early stages.

3. Institutional treatment—hospitals and sanatoria where patients come for residence for treatment.

4. Administration—in which the sanitary authority co-ordinates with voluntary efforts to receive information of cases, advise treatment, disinfect houses, and improve sanitary surroundings.

It is now necessary to adopt a Scheme for the control of Tuberculosis in Bombay. In doing so, we have to bear in mind the difference in the conditions surrounding the question, compared with English towns.

A large percentage of the people are not yet alive to the advantages of modern methods, but the work done by the Health Department, the Bombay Sanitary Association and King George V Anti-Tuberculosis League has immensely increased the desire on the part of the people for improved sanitation and the demand for hospital and dispensary treatment is rapidly growing.

In proposing a Scheme for Bombay, we have many advantages. The dispensaries and Registration Offices with the Nurses and Health Visitors started in 1901 have up to now been working as offices of inquiry, report, disinfection and education, and the medical officers are systematically enquiring into the existence of Tubercular cases and taking action. With the exception of the Dispensary at Falkland Road, none of the premises occupied as such are the property of the Municipality, and we are constantly changing them with the result of much inconvenience, and although we have put forward proposals for acquiring sites and erecting suitable buildings, the question does not progress.

All Municipal Dispensaries should be the property of the Municipality and be built on a uniform plan.

It is estimated that for the control of Tuberculosis, one Dispensary should be provided for every 200,000 population.

I consider that with the present system of utilising the existing Dispensaries and the services of the District Registrars for extra work on Tuberculosis, the provision of one properly equipped Tuberculosis Dispensary, in addition to that of King George V Anti-Tuberculosis League would be sufficient at present.

The Staff required would be :—

	PAY Rs.
1 Specially trained Tuberculosis Officer .	250—300 p.m.
2 Nurses	200 „
1 Clerk	50 „
1 Peon	15 „
1 Hamal	15 „
1 Compounder	30 „
Drugs	50 „
Contingencies	10 „
	<hr/>
Total Rupees	670 p.m.

The Tuberculosis Officer will work under the Executive Health Officer, supervising the Tuberculosis work of the Dispensaries, treat cases, and distribute patients to the Tuberculosis Hospital Wards.

Institutional Treatment: Hospitals and Sanatoria.

Provision should be made for 200 beds :—

50 Beds to be provided at Maratha Hospital.

50 „ „ on land adjoining Arthur Road Hospital,
when made suitable.

50 Beds to be at King Edward VII Memorial Hospital.

50 „ „ at the General Hospital.

The provision of Tuberculosis Dispensary and 200 beds could be spread over three years thus :—

1st year, 1 Dispensary and 50 Beds at Maratha Hospital.

2nd „ „ 50 Beds at Arthur Road Hospital.

3rd „ „ 50 Beds at King Edward VII Memorial Hospital.

The initial expenditure would be :—

1st year, Rs. 1,50,000 for 1 Dispensary and Hospital	for 50 Beds.
2nd „ „ 1,50,000	for 50 „
3rd „ „ 1,50,000	for 50 „

The annual cost when working would be :—

1st year, 1 Dispensary	...	Rs. 7,500	per annum.
„ „ 1 Hospital	...	Rs. 25,000	„
		Rs. 32,500	„

Grant for relief of the poorer cases
in the way of extra nourish-
ment. Rs. 7,500 per annum.

Inclusive of salary of District
Registrars of the 10 Municipal
Dispensaries Rs. 6,000

Rs. 46,000 per annum.

The question of Sanatoria outside the Island is one which should receive the attention of Government and the Municipalities and the local authorities of the Presidency as it would receive patients from all parts and the initial outlay should be borne by the different bodies aided by voluntary contributions and the annual expenditure defrayed by the authorities sending patients and by receipts from paying patients.

Protection of Newly Paved Streets.*

[BY R. KEITH COMPTON, CHAIRMAN AND CONSULTING
ENGINEER, PAVING COMMISSION, BALTIMORE, MD.]

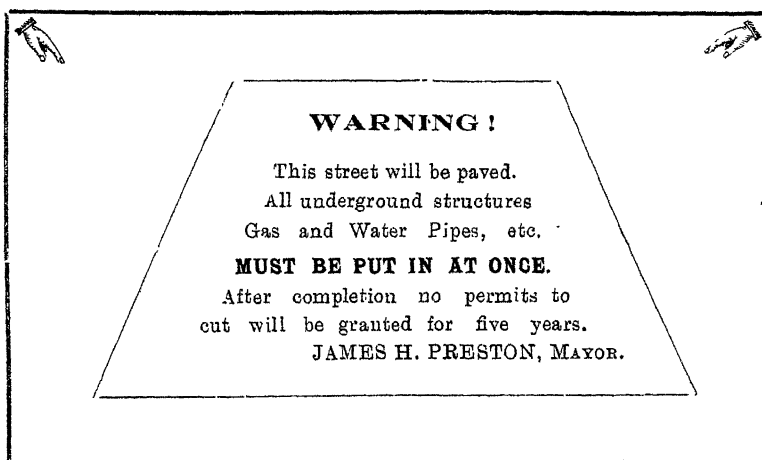
THE City of Baltimore is trying to lengthen the life of its new pavements by a simple and entirely feasible plan, which consists in an appeal for co-operation on the part of property owners and leaseholders.

The warning sign herewith reproduced is placed in each square as far ahead of paving operations as possible. In addition to this, and in accordance with an act of the

* From the *American City*.

Maryland Legislature, a list of the streets and alleys about to be paved is published several times in two daily papers for a period of at least six weeks prior to the actual work. Written notices are served on all city departments and public service corporations having underground structures in the streets concerned. An individual notice is also served on the leaseholder of each piece of abutting property.

This notice, reproduced below, is in three sections. The first section tells property owners what they should do before paving operations are begun; the second section makes certain suggestions to be carried out during paving operations; and the third section is to encourage the people to take care of improved pavements after they are laid.



NOTICE OF COMING PAVING OPERATIONS.

For three or four years, only the first section of this notice was served, and the cuts were thereby reduced to a limited extent. For the last year, however, this entire system has been in operation, and the cuts in improved pavements have been reduced to a minimum. Of course, when a leaky water or gas pipe or any other break develops, it becomes necessary to open the street.

The notice to property holders is as follows :

PAVING COMMISSION.

Baltimore, Md.....

To the owner or leaseholder of
this Property on.....street.

Before Paving Operations are begun.

You are hereby notified that the street fronting this property is to be paved with improved pavement, and that the work will commence shortly after six weeks subsequent to the date of this notice.

All necessary underground construction for installing or repairing gas, water, electric and other subway structures must be done before the street is paved. After the new pavement is laid, no permits to cut trenches or to disturb the pavement will be issued. Notice to the above effect has been given by public advertisement.

During Paving Operations.

In order to assist this department in obtaining good work and assisting the contractor in every way, the following suggestions are offered :

Do not allow unnecessary waste water to flow upon the streets, which interferes with and delays the work, and causes unnecessary expense.

Do not persist in passing " Street Closed " signs, as they are put up to protect the work and should be obeyed.

Do not use a hose on a newly-laid street, as the force of the water tends to tear out the filler between the blocks before it has become hardened.

If you have a complaint to make, do not argue with the foreman on the work ; call up the Paving Commission's Office, St. Paul, 2,000, Station 192.

After Paving Operations are completed.

In order to assist in the proper care of improved pavements, in which every property owner and leaseholder should be interested, the following suggestions are made :

Do not allow your servants to throw soapy or polluted water on the streets. Have this emptied into a sink, so that it will be carried into a sewer.

Do not throw paper, trash, etc., in gutters, as it not only is unsightly, but it dams the water flow in the gutters, causing it to spread out over a large area of the street.

Do not build fires on improved pavements, as the heat is sure to destroy them.

Do not allow oils, gasoline, etc., to drop upon improved pavements, especially asphalt.

Do not chop ice off of improved pavements with sharp-edged tools, which penetrate the ice and injure the pavement below.

If you are a builder, pile your building materials on a platform; mix mortar in boxes or on boards, not directly on the street.

There is a law relating to the above suggestions. Be a law-abiding citizen and obey them.

Pavement Poetry.

They took a little gravel, and they took a little tar,
With various ingredients imported from afar,
They hammered it and rolled it, and when they went away
They said they had a pavement that would last for many a day.
But they came back with picks, and smote it to lay a water main,
And then they called a workman to put it back again.
To run a railway cable, they took it up once more,
And they put it back again just where it was before.
And they took it up for conduits to run the telephone,
And then they put it back again as hard as any stone.
They took it up for wires to feed the electric light,
And then they put it back again, which was no more than right.
Now, the pavement's full of furrows, there are patches everywhere
You'd like to ride upon it, but it's seldom that you dare.
It's a very handsome pavement, a credit to the town,
They're always diggin' of it up, or puttin' of it down.

Conservancy in Madras.

[BY CAPTAIN A. J. H. RUSSELL, M.A., M.D., D.T.M., I.M.S.]

THE Conservancy of Madras City has been a perpetual source of complaint and a cause of much newspaper correspondence to the inhabitants for many years. Mr. Coats' report, which has just been issued, shows that not only has the question been "a never-failing asset to the grumbling ratepayer", but that it has been always "a thorn in the flesh" to the Executive. As far back as March, 1882, Mr. Jones, the then Vice-President, wrote a lengthy indictment regarding the insanitary state of the city, and many of the problems which exercised that gentleman seem to be still unsolved. He also pointed out the several ways in which improvement might be effected, and concluded by stating that "the state of Madras must get worse if it does not get better" and that "it is now quite time that we made others aware that whatever have been our shortcomings in the past, the future policy of the Municipal Commissioners of Madras will be health even before wealth and prosperity."

From the present report it is to be noted that no less than twenty tons of night-soil alone "are deposited daily in unauthorised places scattered all over the city and not collected and removed but allowed to remain and decomposed and pollute the atmosphere." When it is also remembered that the death-rate in the city still reaches the appalling figure of 38 per thousand, it may not be out of place to ask whether the Municipal Commissioners, during the 33 years that have elapsed since Mr. Jones wrote his report, have not preferred "wealth and prosperity" to health.

In his report of 1882, Mr. Jones wrote, "Proper supervision, I consider, a most, if not, the most important fact in the work of the town." Many "notes" on conservancy have been written since, and it is a curious fact that in practically every one, similar words are used. Dr. Macdonald, the Health Officer, writes, "The (conservancy) staff is a fluctuating one

over which we have but little control." Dr. Isaac, Assistant Health Officer, states, "some of the sections are too big..... to have a proper supervision." Dr. Macdonald, in an earlier note, makes the statement that "there is a further weakness in the supervision of labour." Dr. Singaravelu Moodaliar, Assistant Health Officer, says, "The system of working the conservancy staff, as it obtains at present, undoubtedly renders the due control of labour extremely difficult." Dr. Matthew, till recently Assistant Health Officer, corroborates these statements by writing: "Owing to.....the various difficulties connected with the controlling of such labourers..... ." In the Health Report of 1913, among other defects, mention is made of "the insufficient supervision by section peons," and "the lack of supervision on the part of the Conservancy Overseers." Dr. Matthew in the earlier note again remarks that "any system which aims at a number of coolies working together in the presence of a peon or other controlling subordinate would be of immense advantage."

Mr. Coats condemns the present system also in the following words: "The (conservancy) coolies are only subject to the very slightest amount of supervision, as the Conservancy Overseer or the Section Peon cannot possibly visit every part of the area more than twice a day;" and "this will mean that the Corporation will have to spend rather more on supervision than it does at present; but this is absolutely necessary, as one of the great faults, if not the greatest, fault of the present system is its admittedly utterly inadequate supervision." In the face of such unanimity of opinion, we may take it as true that the supervision has been deplorably bad.

Two interesting tables given in the report are worth mentioning in this respect. Mr. Coats has calculated that the supervision charges "amount to just 11% of the cost of labour, maintenance of bullocks, &c., which cannot be considered too high a figure," and a comparative statement, showing the average cost of conservancy per head of the population per annum, demonstrates the interesting fact that the cost

per head in Madras is less than that of five of the other six Indian cities for which figures are given. "It may well be that one of the reasons why conservancy is so bad in Madras is that enough money is not spent on the work."

It would, therefore, seem that there is a close co-relation between the facts that have been elicited. The conservancy of the city is admittedly bad, the supervision is admittedly inefficient and the cost of the supervising is comparatively small. It is a maxim that cheap goods are always nasty.

Bad conservancy always means increased sickness, and the vital statistics of Madras give ample proof of the maxim.

A recent Health Report for the town of Manila in the Philippines demonstrates the economy of what apparently looked like extravagant expenditure on the part of the authorities there. When the Americans took over the administration of these islands, the death rate was as high as 40 per thousand and in twelve years this was reduced to 22 per thousand. This means that only a little more than half the deaths were occurring, but it also means—and this is perhaps more important—that there were 7 to 10 times fewer sick people, and that labour, which is the source of all wealth, was in that respect so many times more productive and efficient. In the Madras Conservancy Report a deficient labour supply is again and again referred to. Improve the conservancy, and the labouring classes—by which the conservancy work is done—would be the more healthy and the more fit to carry out the work.

A short description of the method by which the American authorities effected this improvement may be of interest. The Health Officer in his original proposals asked for 300 Sanitary Inspectors,—the population being 40,000,—and got them. These so called "Sanitary Inspectors" had no special sanitary training, their educational qualifications were nil, but they were required to be energetic and hard-working and experienced in controlling, and extracting work from, the coolie

labourers. They were in fact recruited from the class which corresponds to the "maistrie" class in Madras. These men, however, required supervision just as their underlings did, and a small trained staff of "Cleaning Superintendents" were appointed to carry this out. In order to make the scheme still more effective, these 300 "maistries" were graded on a rising scale of pay; but promotion did not come automatically by seniority as is the custom in Madras. The outdoor upper grade Superintendents, who were all Europeans, reported monthly on the work of each maistrie and marks were deducted for bad work. According as his duties had been carried out satisfactorily or otherwise, he was promoted or degraded, but in any case he had to earn at least 75% of his marks. Any man reported on unsatisfactorily on three occasions was summarily dismissed. Competition was, therefore, always keen, and the men vied with each other in keeping their respective districts in a completely sanitary condition. The districts were naturally small, but the extra expenditure was, in the short period of 12 years, amply justified; the transaction was economically sound.

Mr. Coats rightly objects to the present class of Conservancy Overseers in Madras,—there are only 20 of them for a population of nearly 600,000. These men are not only Brahmins, for the most part; but are confessedly filling in time until vacancies occur in the ranks of the Sanitary Inspectors for which posts they are qualified. Conservancy will never be successfully carried out by them, and Mr. Coats replaces them in his re-organisation scheme by a large number of "maistries" on a considerably lower grade of pay. So far his suggestions are on the correct lines; but 134 "maistries" for the whole of Madras is far too small a number. Three Cleansing Superintendents, if the right class of men were got, would be sufficient. In order to encourage the right man, the Manila scheme of promotion should be adopted, as only in this way would intrigue and incompetence be finally stamped out.

In a large city like Madras, it is unfair to the Health Authorities to place Conservancy work in their charge. The Health Officer and his Assistants are not only prevented from giving their undivided attention to sanitary problems, but they are placed in the invidious position of having to carry out work which they really ought to be criticising. It must be remembered that a Health Officer is, first and last, an advisory officer, and to burden him with the task of carrying out conservancy is a mere prostitution of medical energy. The proposal made by Mr. Coats to "economise", by reducing the number of Assistant Health Officers, should be vetoed. That would be a retrogressive step in every sense of the word. Whoever is in charge, conservancy will still be the province of the Health Officer and his Assistants, but only from the critic's standpoint; and, as it is, three Assistant Health Officers for a population of over half a million, with a death rate of nearly 40 per 1000, is by no means an excessive number. It is to be hoped therefore that the Municipal Commissioners will see that it is wholly to the advantage of the people they represent to inaugurate a "Cleansing and Scavenging Department," such as Mr. Coats has outlined in his report. As he says, the work of cleansing a city has come to be recognised as a separate profession and the men who practise it are specially trained in it.

The Commissioners have now got the collated facts presented to them in an admirably concise form. It is to be hoped that they will face the whole question without delay, and prepare to take the broadest view of the subject. No re-organisation will be a success unless they realise that niggardliness in their expenditure on the supervising staff will be fatal and will be, moreover, economically unsound. It is a business transaction, and worked on a business-like footing, the outlay will be repaid to the community with interest, not only in renewed health, but in ever-increasing "wealth and prosperity".

Municipal Projects in Bengal.

THE CALCUTTA GAZETTE of 19th May, 1915, publishes the draft of the rules for the preparation, submission and execution of projects for water-supply, sewerage or drainage undertaken by the Municipal authorities in Bengal. The rules provide that—

(1) For all schemes and projects costing more than Rs. 5,000, a sketch of the project detailing its scope and approximate cost shall be drawn up either by the Sanitary Engineer or by any other person or firm approved by the Sanitary Engineer. The latter officer shall in all cases be the Consulting Engineer to the Municipal body.

(2) The sketch referred to in (1) shall be submitted through the usual channels to the Sanitary Board accompanied by a statement showing ways and means for meeting the capital and recurring cost of the project. The Sanitary Engineer—one of the channels mentioned above—may however return the scheme to the Municipal authority for revision or alteration if he finds it unsatisfactory and lacking in information.

It is here we wish to join issue with the Government. If a scheme is drawn up by the Sanitary Engineer or under his advice, there should be no occasion for returning the scheme for revision or alteration. It is presumed the Sanitary Engineer is informed of the character of the project and the requirements of the municipal body before it is drawn up. The Sanitary Engineer is expected, if he is not the actual designer, to give complete data, etc., for the basis of the design—and if the designer is competent, as he should be, being approved and practically appointed by the Sanitary Engineer, there should be no cause for the delay caused by the return of the plans and estimates. It is this delay that is

most vexatious and is the cause of the large lapses under grants for sanitary improvements and schemes. It should be possible to so arrange that the designer, who is not the Sanitary Engineer, shall be in frequent and constant touch with the latter officer during the period of the preparation of the plans and estimates of the project, so as to obviate their return and the consequent delay in obtaining administrative approval. Such delays caused by the plans passing to and from the Sanitary Engineer are, we believe, notorious in the Madras Presidency.

(3) After the procedure prescribed in (2) has been passed through, the Sanitary Board shall submit the scheme for administrative approval with their recommendations. The Municipal Authority shall at the same time satisfy Government regarding the financing and execution of the project. These conditions are very similar to those obtaining in the Madras Presidency.

The remaining rules detail the procedure to be followed after administrative approval has been granted, and relates to the preparation of plans and estimates, submission of same to Government through the Sanitary Board, commencement and supervision of work, preparation of drawings and specification for tenders and contracts, and acceptance of tenders. It seems unnecessary for us to go into the details of these rules. They are drawn up on careful and cautious lines and are calculated to safeguard the interests of Municipalities. In all cases, where any details of a scheme are not worked out or carried by the Sanitary Engineer, the rules provide for a close and careful examination by this officer. Where, however, the whole scheme including the design and execution is taken over by the Sanitary Engineer, fees for both design and execution are levied by Government on the Municipal body concerned. The fees vary from $\frac{1}{2}$ per cent. to 2 per cent. in the case of plans and estimates, contract drawings and forms of tender, and from $3\frac{1}{2}$ per cent. to 8 per cent. for supervision and control of

works. In the latter case the amounts are moderated to suit the cost of the scheme and varies from a maximum fee of Rs. 1,400 for schemes costing less than Rs. 20,000 to a maximum fee of Rs. 35,000 for schemes costing less than Rs. 10,00,000. The fees will be no heavy charge on the cost of the scheme and seem to us moderate and reasonable.

Sanitation Committees in Bengal.

THE same Gazette publishes the draft rules regulating the duties and powers of Sanitation Committees. The duty of such a Committee is to "advise the District Board in all matters relating to the improvement of sanitation in the district." It is presumed that each District Board will have a Committee of its own.

Among the powers that may be delegated to this Committee are (1) Supervision of the work of the Sanitary Inspector. (2) Direct control and administration in the matter of dealing with tanks, wells, pools, ditches, drains or places likely to be prejudicial to health. (3) Arrangements for the sanitation of fairs and melas held within a Union. (4) Approval of schemes for rural sanitary improvement. (5) Allotment of money to Unions for sanitary works and supervision of their expenditure. (6) Sanitary improvements of village sites and areas outside Unions. (7) Measures (a) to combat or prevent outbreaks of epidemic diseases, (b) to distribute medicines, (c) to control sale of articles of food or drink for human consumption.

We should like similar Committees introduced for the District Boards in all the provinces.



Administration of Local Boards during 1913-14.

[Bombay.]

THE resolution of the Bombay Government on the reports of the Commissioners on the administration of local boards in that Presidency, during 1913-14, has been before us for some time. As observed by the Local Government, the administration presents no features of special interest. 26 District Boards and 216 Taluk Boards managed the local affairs with an aggregate income of 74.6 lakhs, while the expenditure for the year amounted to 78.48 lakhs. The noteworthy feature under receipts is the considerable increase of 3.50 lakhs under education due chiefly to the grants made by the Government for the opening of new primary schools and for the improvement of the pay of teachers in such schools. The Government resolution remarks that the progress made during the year due to the opening of new schools was most striking in some divisions and it is a matter for special satisfaction to note that considerable attention seems to have been devoted in the southern division to the extension of female education. Several new schools were opened for girls and the action of the Bijapur District board in having sanctioned a grant of Rs. 1,000 for scholarships to girls for regular attendance in schools seems to us to be specially praiseworthy. We are glad to observe that this experiment is reported to have been attended with encouraging results and that it is being brought to the notice of the other boards. We hope the local boards and Municipalities in other Provinces will give this experiment a trial.

Under medical, the work of the District sanitary associations deserves prominent mention. It is reported that these bodies are doing excellent work in awakening public interest in

the improvement of sanitation of villages and in the adoption of measures of precaution against such diseases as malaria and cholera.

The accumulation of large closing balances without any aim whatever has been strongly animadverted upon by one of the Commissioners and the Local Government. The explanation given in this case is the receipt of Government grants for special works late in the year and the scarcity of labour preventing the execution of public works for which provision has been entered in the budget. The Local Government while recognising that the labour difficulty constitutes in many cases a serious obstacle to rapid and regular expenditure on budgetted works, point out that the difficulty is not insurmountable, if organised measures are taken and if the interest and co-operation of the non-official members and the people can be secured. Among the organised measures indicated, the principal one is the engagement of an adequate and efficient engineering staff, a requisite in which most of the boards are reported to be evidently lacking.

Some appreciative mention has also been made of the work of the special committees appointed in several districts for the supervision of the Public Works. It is a pity that the non-official members in one of the sub-divisions are reported to have been very apathetic in the discharge of their duties in this direction.

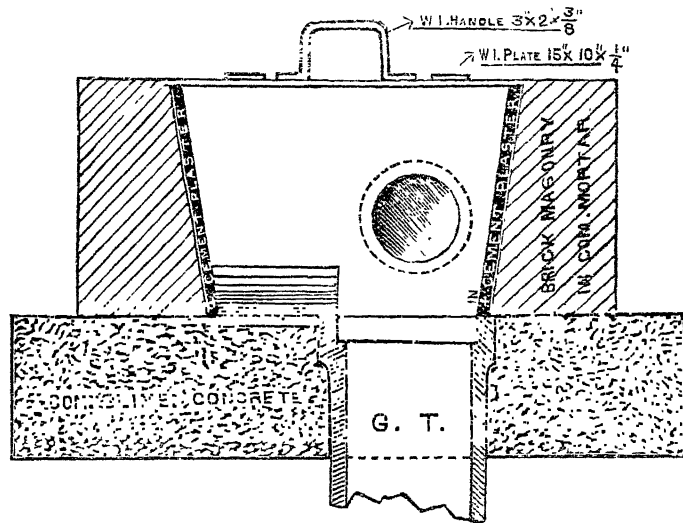
The Government in conclusion observe that the administration of the local boards during the year appears to have been on the whole of a satisfactory character and that steady progress is being maintained by them towards meeting local needs and that within the rather rigid limits of their resources, they are working conscientiously to improve the amenities of life in the area which they control. More extended communications and the improvement of village water supplies continue to represent the principal needs of these areas,

notwithstanding the fact that for many years these objects of expenditure have consistently absorbed a large portion of their revenues. The Government add that the interest of the non-official members in the practical work of the boards does not yet appear to have been generally aroused, but that there are indications of an improvement in this respect which are distinctly hopeful. We entirely agree with the Government in their view that the non-official apathy is to a great extent due to the limited resources made available for these boards and to the departmental control in some important matters, such as, education. As observed by the Government, local fund administration offers a considerable field of activity for those non-official members who are willing to sacrifice their time and devote their energies to the supervision and inspection of works undertaken for the benefits of their constituents and we venture to hope that these members will not be reluctant to make such a sacrifice in order to advance the cause of local self-government in this country.

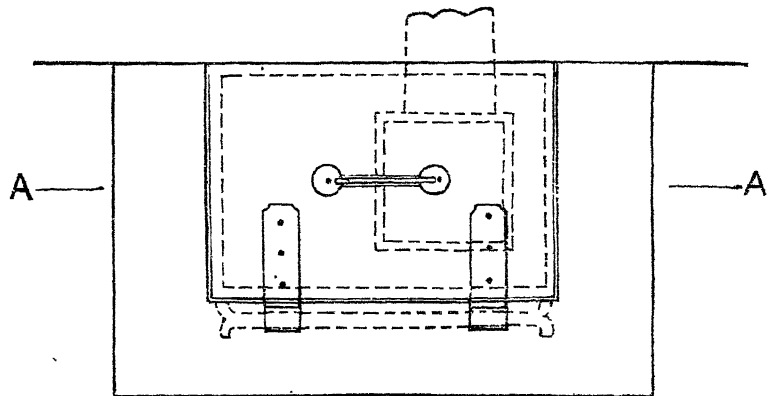
Gully Traps.

GULLY traps are commonly found to be breeding places of *culex* and *stigomya* unless they are properly protected by tight fitting covers which will prevent their acting as breeding places for mosquitoes. The following rule has been recommended by the Commissioner, Bombay Corporation, and approved by the Corporation to be added to the Drainage Rules at present in force in Bombay :—All gully traps when directed by the Deputy Executive Engineer shall be covered with a hinged iron cover and a frame of approved design.

The accompanying illustration reproduces the type of cover approved by the Executive, and shows how the cover is made. It is merely an iron cover hinged to an iron frame. It costs about Rs. 2-8 to manufacture each frame and cover.



—SECTION ON LINE A. A.—



—PLAN—

—SCALE $\frac{1}{8}$ FULL SIZE—

W. I. Cover over Gully Trap.
(BOMBAY MUNICIPALITY.)

Malicious Prosecution and Public Health Summonses.*

WILL an action for malicious prosecution lie against a local authority in respect of a summons taken out under section 95 of the Public Health Act, 1875? This was the question which arose for consideration in the case of *Wiffen v. Bailey and the Romford Urban District Council*, (1914), 79 J. P. 145. Horridge, J., who tried the case answered the question in the affirmative, but the Court of Appeal reversed his decision. That Court did not decide that in no case would an action lie in respect of such proceedings, but the decision goes a considerable way in that direction.

From the point of view of local authorities and their officials, the judgment is a satisfactory one. Had the original verdict been maintained, the work of sanitary officials might have been hampered. As regards the public, the power of the Justices to award costs when they dismiss a summons is some protection to the defendant, and the fact that it is dismissed is in itself a sufficient answer to any allegation made against him.

The action in question was brought against both the Inspector of nuisances, by name Bailey, and the District Council. The matter arose in this way. Mrs. Wiffen, the wife of the plaintiff, wrote a letter to the Inspector complaining that the larder of their house was one where the sewage had been through five times and was never repaired, one of the ceilings was going and it was in a terrible state. She asked the Inspector to help them. He visited the house, and two days afterwards served a notice on Mr. Wiffen stating that a nuisance existed at the house and requiring him to abate it within 21 days. The nuisance alleged was the want of cleansing of the two front rooms in the ground floor, the kitchen passage, pantry and bathroom, and the plaintiff was required to do certain works. When this notice was given, the Inspector

* From the *Justice of the Peace*.

had not received the sanction of the authority to give it, but his action was subsequently confirmed.

The landlord instructed a member of the Council to do the repairs to the pantry and those repairs were done. This member was in the chair when the action of Bailey was confirmed by a Committee of the Council.

As the bulk of the repairs were not done, a complaint was lodged before Justices that the notice had not been complied with. When this summons came on for hearing, the complaint was dismissed by the Justices and the plaintiff was awarded five guineas costs. Shortly afterwards, Mr. Wiffen began this action for malicious prosecution. At the trial, the jury found that neither of the defendants had taken reasonable care to inform themselves of the true state of facts, that they did not honestly believe the case they laid before the Justices, that they were both actuated by indirect motives, and that Bailey was not acting under the direction of the other defendants *bona fide* for the purposes of executing the Act. They also found that it was a necessary and natural consequence of the prosecution to damage the plaintiff's fair fame, and they awarded damages £250, but against the Council only. Horridge, J. entered judgment against both defendants.

The defendants applied for a new trial and the Court of Appeal was of opinion that the findings of the jury were against the weight of evidence. A new trial would therefore have been granted, but the Court further considered the question whether the facts disclosed a good cause of action and decided that they did not. Judgment was therefore entered for the defendants. The importance of the case lies in the discussion of the grounds necessary to found an action for malicious prosecution. It appears clear from a long series of authorities dating back to the end of 17th century that the action cannot be maintained unless damages of three kinds are proved. These are (1) damages to the fair fame of the plaintiff, as if the matter whereof he is used be scandalous, (2) damages to his person, as when a man is put in danger of

his liberty, or (3) damages to his property, as when he is forced to expend money in necessary charges to acquit himself of the crime of which he is accused. Buckley, L. J., in his judgment summed this up as follows :— “ If there be no scandal, if there be no danger of imprisonment, if there be no pecuniary loss, the action will not lie.”

There was no pecuniary loss because the cost awarded by the Justices are in law a sufficient compensation for any expense to which the defendant is supposed to have been put. They may not cover all the costs to which the defendant has been put, but they are deemed to be sufficient.

As to the second ground, the Public Health Act, 1875, section 96 only authorises the Justices to impose a fine; they have no power to imprison. It is true that if the fine is not paid, and if after distress there is a return of no assets, the defendant might be imprisoned but this is an indirect result. It might happen in connection with the recovery of a debt in a County Court. The Court, therefore, did not consider that the proceedings subjected the defendant to risk of imprisonment.

There remained then only the question of scandal, or injury to his fair fame. There is no question that certain proceedings before a Court of summary jurisdiction would amount to a scandal. A good example of this is found in *Rayson v. South London Tramways*, (1893), 58 J. P. 20; (1893) 2 Q. B. 304. In that case the plaintiff was summoned for travelling on a tram car without paying the fare, or travelling beyond the distance for which the fare was paid. The proceedings were taken under section 51 of the Tramways Act, 1870.

The allegation in that case was one of cheating, and if it had not been for the provision in the statute, the defendant might have been indicted for a misdemeanour. The Court of Appeal were of opinion that an action for malicious prosecution could be maintained as a procedure before a magistrate was for a criminal offence. The Court did not, however, go into the principles very fully, and the judgment of Brett, M. R.,

the only one delivered in that case, rather suggests that every offence which may be prosecuted before Justices might found an action for malicious prosecution. It was by following that case that Horridge, J., entered judgment for the plaintiff in the case we are discussing. It seems clear, however, from the latter decision that a proceeding which merely implies a neglect to obey a notice does not injure a person's fair fame. It would seem that in order to found the action that charge must be one of a scandalous nature, one which in itself imports wickedness. It would seem to follow that many of the proceedings under the Sale of Food and Drugs Acts would not found an action for malicious prosecution because *mens rea* is often not a necessary ingredient of the offence. In all these cases, too, it should be recognized that the publicity of the proceedings is that which causes the damage; but if a like publicity is given to the dismissal of the complaint or information, it is difficult to see what serious damage the defendant to the proceedings can suffer. In the case we have been discussing, the Court was of opinion that the amount of damages awarded, namely £250, was excessive. On that ground alone it would appear that the Court would have granted a new trial.

Notes.

THE following Circular letter has been addressed by the Secretary to the Government of Behar and Orissa to all Commissioners of Divisions:—I am directed to say that the Lieutenant-Governor in Council is pleased to authorise you as well as all the District Officers in your Division to subscribe, without reference to Government, to the monthly journal entitled "*The Local Self-Government Gazette*" which is published in Madras. The charge will be met from the budget grant of the officer concerned for books and publications allotted each year.

I am also to ask that the attention of all the Chairmen of Municipalities and District Boards in your Division may be drawn to the journal.

[Bombay.]

Bombay Corporation.

ENTERTAINMENTS TO MUNICIPAL OFFICERS.—On the motion of Dr. Nadirshaw H. E. Sukhia, the Bombay Corporation passed the following resolution at a recent meeting : The attention of the Commissioner be invited to the Government Servants' Conduct Rules, 1904, and he be informed that in the opinion of the Corporation it is not desirable that Municipal officers or subordinates should be entertained by their subordinates and other Municipal officers or given gifts, souvenirs, gratuity or reward.

MUNICIPAL CONFERENCE.—The Bombay Corporation passed the following resolution on the letter addressed to the President from the President, City Municipality, Surat, suggesting the desirability of having a Conference of all the Municipalities of the Bombay Presidency once a year or triennially for the discussion of Municipal problems : This Corporation do not see their way to join the Conference as the constitution of the Bombay Municipality so widely differs from those of the mofussil municipalities, but the Corporation will, however, have no objection to sending one or two of their representatives to attend the proposed Conference provided it is held triennially.

Hubli Municipality.

CONSTITUTION.—In exercise of the powers conferred by Section 11 of the Bombay District Municipal Act, 1901, and in supersession of all previous notifications on the subject, the Governor in Council has been pleased to direct that with effect from 1st October, 1915, the Municipality of Hubli shall consist of twenty-four Councillors, of whom sixteen shall be elected and the remainder nominated and that of the nominated Councillors four may be salaried servants of Government.

, [Madras.]

VILLAGE EXTENSIONS.—The Sanitary Board find that a prominent result of the issue of type-design (No. 108) for village extensions has been that the design, though intended

only as a type for general guidance. has been followed in every detail, without sufficient consideration of surrounding circumstances in cases to which it was not suited. The design has, therefore, now been cancelled and local bodies have been requested to obtain the help of the Town Planning Adviser to Government in all future cases of town or village extensions.

[Punjab.]

VACCINATION ACT.—The provisions of the Vaccination Act, XIII of 1880, have been extended to the Municipality of Palwal in the Gurgaon District.

[United Provinces.]

Mussooree.

An application from the Mussooree Municipal Board is published for the grant of a loan of Rs. 16,000 from the United Provinces Government under the Local Authorities Loan Act, IX of 1914, for house wiring and water connections. The loan carries interest at 4 per cent. per annum and is repayable in ten yearly instalments of equal amount in discharge of interest and in repayment of principal. The loans outstanding on 31st March, 1915, amount to Rs. 12,22,548.

[United Provinces]

Nagina Municipality.

RICE CULTIVATION.—The following rule has been made by the Municipal Board of Nagina under Section 109 of the United Provinces Municipalities Act, 1900, to regulate the growing of rice:— No person shall within Municipal limits grow or cause to be grown rice within half a mile of the inhabited area in the Nagina Municipality.



Public Health and Sanitation.

Model Lectures on Sanitary Subjects.

[PREPARED BY MAJOR W.A. JUSTICE, M.B., C.M., D.P.H., I.M.S.]

Removal and disposal of waste matter.

Sewage.—There are two methods—wet and dry systems. The former is only used in a few towns in India, as it is expensive and can only be supported by large towns with a good income. An abundant supply of water is also necessary to flush the water-closets and sewers. In Madras Presidency we depend on the dry system which requires manual labour-sweepers and toties. It is of vital importance that the arrangement for the collection and disposal of the night-soil should be carried out in an efficient manner. In order that this may be done, municipal councils must employ a sufficient staff and have a properly equipped conservancy plant. To calculate these requirements, it is necessary to estimate the amount of excreta—solid and liquid—daily in a population. The majority of Indians are vegetable eaters; they have consequently to take more food and have therefore a great deal more faecal matter to be voided. There is no difference in the quantity of urine from other races but we have to add the quantity of water required for ablution. Vegetarians void $1\frac{1}{2}$ times more matter than meat eaters. This is estimated at 8·4 oz. of solids, 40 oz. liquids and 40 oz. more for ablution. Now, in a population of 1,000, we add the above figures and multiply the resulting ounces by 1,000. You must convert this into cubic feet (1,000 ounces equal 1 cubic foot)—roughly 88 cubic feet of night-soil.

Number of pails required for removal.—A pail usually holds 1 cubic foot of material, so that for a population of 1,000 you would require 90 pails. Of course the number of trips the coolies have to take modifies the number required. If two trips a day are made, half that number will be sufficient. Again, the distance from depôts and the trenching ground or

dumping pit must be considered. These remarks also apply to the number of carts.

Carts.—A cart usually holds 12 cubic feet of material. Eight carts would be ample for a population of 1,000. It is far better to over-estimate your requirements. You can easily reduce but it is difficult to increase your plant: besides, under-estimation leads to inefficiency.

Latrines.—Protection from rain and flood-water is necessary. They should be built on a raised plinth and covered. If this is neglected, latrines tend to become a nuisance. The best latrines are those which aim at the separation of liquids and solids. This is very difficult to carry out. When they are mixed together, decomposition takes place very rapidly. Chloride of lime does not retard decomposition, and disinfectants only mask the odour and disguise inattention. They should be avoided. A latrine which is properly conserved should not cause any offensiveness. The habits of the people in this country require specially-constructed seats. If dry earth is used freely, much of the unpleasant features of a latrine would be removed.

Inside houses there is nothing equal to an ordinary commode, provided plenty of dry earth or saw-dust is used—not sand, gravel or chalk. A receptacle with a tight fitting cover should be maintained in the garden which should have access for the sweeper. The receptacle should always be covered; inattention to this will result in a plague of flies and other unpleasantness.

Night-soil carts.—You are perhaps all too well aware of the appearance of these. A little attention on the part of the staff would greatly minimize their horrors. They should be capable of being easily emptied—that is on being tipped up, they will completely empty themselves. They should be cleaned inside and outside at the trenching ground.

Choosing of site.—The choosing of a site for this is of great importance; raised or level ground should be selected and a low-lying site avoided. If you can only get low-lying ground, it will require treatment and you will have to drain by intercepting drains and level it—which is very costly.

Plotting of site.—The area required for each 1,000 population is $1\frac{1}{2}$ acres—this should be divided up into 12 portions—make roads between each portion, one for each month of the year and each part into 31 parts—one part for each day of the month—these should be long and parallel to one another and separated by a foot breadth.

The trenches are dug 18 inches deep and 2 feet wide; 45 square feet including the space between the trenches is the area required per day.

Eight inches of night-soil is filled in and then covered over with earth. It is advisable that the trenches be prepared one day in advance—all the lumps of earth broken up with a mallet and exposed to the air. The old custom of having trenches 5 and 6 feet deep must be avoided.

The trenches should not be near inhabited houses; if properly attended to and properly supervised, there will be no nuisance from a trenching ground. If flies are present, then the trenches have been badly looked after. A trenching ground should be ploughed up after 3 months and crops of hariah grass or tobacco crops grown.

Provision of a water-supply at the trenching ground for cleansing the carts, etc., is necessary; and in dry climate it is advisable to water the land to prevent dust flying about.

Bath-room water and kitchen sullage.—In most of our villages and towns this is thrown out on the street, or drains into the backyard. This is very undesirable as often they form breeding places for flies and mosquitoes. A good method of disposing of this is by means of a filter trench 18 inches deep filled to a depth of 4 inches with stones, then gravel 6 inches

on top, then sand and then stones on top to keep the sand from blowing or getting washed away—a lead off drain to the nearest storm-water drain.

In Anantapur, for many generations a method has been employed which resembles the above. It consists of a deep hole in the ground, this is filled with huge stones. I had one dug up for inspection—the place was devoid of any bad smell and the stones were covered with a black felt covering and no evil effects had been noticed in the house which had this contrivance in use for generations. Mr. Hutton, the Sanitary Engineer, devised a method for ventilating these.

Storm-waters.—In most of the towns and villages in this country, storm-water is carried away by side cuttings and U shaped masonry drains. These are necessary for the protection of the roads and are of importance; they are in many instances neglected and the water runs over the road destroying it and making pools and puddles for mosquitoes to breed in. They ought to be kept in proper order and a separate staff should be appointed for the purpose entirely. Partial schemes of storm-water drainage should not be undertaken, as it only leads to water-logging of parts which are not drained; levels should be taken and drains constructed from the outlet that is the lowest levels. A complete plan of storm-water drains should be drawn up for each town; this should be stuck to.

These drains should not run near wells; and sewage from bath-rooms should be excluded unless previously passed through filter trenches.

In villages it is the custom of the people to resort to the fields for purposes of nature. If people could only be induced to dig a hole in the ground and fill it up with earth after easing themselves, all danger from this habit would be avoided.

Danger of Flies.

During recent years increasing attention has been paid to the part that flies take in spreading diseases, and many reports of a most valuable character have been issued by the

Local Government Board, and many monographs on the subject have been published by various authors in England and abroad, especially in America, where the common form of house fly is even spoken of as the typhoid fly. An interesting step has been taken recently by the Zoological Society by setting up what is described as an anti-fly exhibition. A few days ago, a Professor Lefroy gave a lecture at this exhibition on the life history of flies and the various means that can be resorted to for the purpose of destroying them and their larvæ. The common house fly, he said, could produce 900 eggs and the life of a generation was three weeks. The blow fly in a much longer life produced 600 eggs. The lesser house fly did not settle on human food and, therefore, was less dangerous, but its appearance was a warning that the common house fly, the winged and wandering bundle of bacteria, was bred somewhere near. Dealing with methods of destruction, the lecturer said it was worth noting that flies needed moist conditions for their larvae; dry materials breed no flies. Flies also disliked darkness. Municipal and other "tips" should be treated with chloride of lime. Burning of refuse of all sorts was strongly recommended. Sulphate of iron might be applied either powdered or in a 20 per cent solution. Miscible oil was a deterrent if sprayed on at 3 to 5 per cent. in water. Wherever possible, stable manure should be accumulated in covered enclosures. For open receptacles, or heaps, most satisfactory results were obtained from borax treatments. Borax in small amounts such as $1\frac{1}{4}$ lb. per eight bushels of manure, destroyed 98 to 99 per cent. of maggots. A 20 per cent. solution of slaked lime was also said to be a good larvicide. For indoors a solution of formalin (40 per cent. formaldehyde) one tablespoon and water one pint, with the addition of little bread or sugar, attracts and poisons flies if distributed in shallow vessels in light spots. Flies avoid shade. Vessels should be set out overnight to draw earliest flies and a crust of bread placed in each. Milk, water, food, and fruit should be covered and

kept in fly screened larders or meatsafes. The exhibition itself is full of interest and goes far to establish the fact that the common house fly which is allowed to live with impunity, is not only a nuisance, but a dangerous enemy of man. The scientific name of the insect is *Musca Domestica*, and if a little attention is devoted to its destruction in the right way and at the right time, it ought to be as easy to get rid of this plague as it has been to get rid of the mosquito in some of those places that used to be stricken with the various malarial fevers which that insect is known to spread. In commenting on the anti-fly exhibition, our contemporary *The Lancet* says that the "danger with which the public is not yet sufficiently familiar is rendered manifest immediately on entering the exhibition. A drawing of the common house fly is suspended to the wall, well in view, which is so large in scale that the hairy covering of the feet and legs is seen, so that it can be readily realised that moist filth from any dust-bin, gully, or midden can be taken up by a moving insect. Later when partially dried this filth may drop off perhaps on any food-stuff over which the fly walks, and the insect may have come in contact with the dejecta of a typhoid patient. The fly, moreover, is a very greedy beast, and will omit undigested food so as to replenish its stomach with other food it prefers. The picture shows how by regurgitation specific germs previously consumed are brought up and ejected on the supplies in unprotected larders, while the insect, emulating the noble Romans of the days of Petronius, quietly proceeds to consume the better fare it has discovered. In this process a large bubble is formed outside the fly's mouth which we see in the drawing. Beneath the revolting and engrossing picture of the fly, there is a series of beautiful models of the germs found by Dr. Birmingham in these bubbles coming from flies. These models magnified to 1,500 diameters, show that flies carry the germs of typhoid fever, tuberculosis, cholera, anthrax, and plague. Flies are also believed on good grounds, to spread ophthalmia, dysentery and infantile diarrhoea. After

feeding on liquid or moist matter contained in excrement, wounds, sputum, decaying meat, fish, or other organic substances, they penetrate our larders and alight on our food. The extent to which disease is spread in this way cannot as yet be estimated, but we need not wait for blood curdling statistics before deciding that the fly is a dangerous enemy to society.

Both the germs and the processes by which they are spread so magnified that we can easily see and understand, are now exhibited. No one can plead ignorance after this object-lesson, and we are immediately led to inquire how so evident a danger is to be avoided. Naturally, the first step is to prevent flies from coming into existence. Where this can be done, we have the most certain remedy. Therefore, we are shown at the exhibition which are the favourite breeding places for flies. They breed freely in every form of offal. Preserved in spirits, there are shown at the exhibition all sorts of offal and refuse—fishes' heads, putrid shell fish, and kitchen debris—in which flies have laid their eggs. The first lesson, therefore, is that no moist offal should be allowed to remain near human settlements; it should be burnt, or buried, or transported where it can do less harm, if more radical methods fail.

“At the Zoological Gardens there are devices for dealing with stable and farmyard manure, which provide the most extensive breeding ground for flies. This has been demonstrated by a simple experiment. After flies have laid their eggs on a small heap of stable manure, if it is boxed over with wire gauze so that none of the flies can escape but must remain to multiply at their birthplace, the rapidity of their increase is demonstrated. And when we realise how quickly a plague of flies can be brought about, we only want to learn the methods of remedy to apply them with a will. A manure heap can be converted into a fly-trap with very little trouble. By placing round it at a distance of 12 inches a ring of dry straw, the straw will quickly contain the maggots as they wish to

pupate, and the straw is burnt every four days so as not to give the chrysalides time to transform themselves into flies. It is not always feasible to dig manure into the ground : it should always be kept dry, or be treated with an insecticide which may be superficially applied, and which will keep flies away."

Compulsory Notification of Births.

DEPUTATION TO MR. WALTER LONG.

Mr. Walter Long, President of the Local Government Board, received a deputation from the Women's Co-operative Guild urging the necessity for adopting compulsory notification of births. This subject was raised at a private conference on Monday by representatives of local authorities and referred to by Mr. E. P. Everest, Clerk to the Atcham Rural District Council at a conference of the Rural District Councils' Association. Questions as to the powers of Rural District Councils were raised at the conference and decided opinions expressed in favour of the first-named class of local authority performing the work. At the deputation, Miss Llewellyn Davies urged that a Bill was needed to give due effect to the circular issued last July by the Local Government Board and asked that the Notification of Births Act should be made universal. It was reasonable to suppose that the 25 per cent. to 30 per cent. of the population now outside its scope should no longer be left without the advantages conferred by the Act. The powers of the county councils should be extended so as to cover the establishment of maternity centres and maternity hospitals. It would be economical to empower county councils to act, and it was the only way in which the much needed care in rural districts could be secured. Without interfering with the local urban initiative, help could be given and public services co-ordinated. Sanitary authorities needed legal power to provide ante-natal advice and treatment.

Mr. Walter Long's reply.

The President of the Local Government Board, in reply, remarked that, anything which could be done to protect infant

life and render more secure the early days of the children who were to become the men and women of the future ought to be done, and any gaps in existing legislation ought certainly to be filled up. While he was at the Local Government Board, he should be only too glad to help in that good work. At this moment of supreme national trial the preservation of infant life and the lives of our women were of increased importance. Death in its most cruel form had already made a terrible inroad upon our population. It was almost incredible, but it was a fact, that in the few months since last August the population of a great town had been removed from amongst us—the best, the bravest, and the finest of our manhood. That meant that a more than usually heavy burden rested on those who were responsible for the health of our people, and it was our bounden duty to see that everything was done that could be done to ensure the well-being of the community. He understood that Miss Davies wished the powers should be extended to county councils. He took it that she did not wish those powers to be limited to county councils, and he was informed that it was necessary to extend the powers of Municipal corporations in the same direction. Municipal corporations had powers as sanitary authorities that county councils did not enjoy for dealing with this matter, but those powers did not go far enough; for example, they did not enable them to deal with health visitation with the care of the mother before and after birth, in the way in which it was desired it should be done. He was prepared to accept the position of his predecessor, who devoted so much time and thought to this subject, and he should be very glad indeed to introduce legislation making the Notification of Births Act compulsory all over the country. The Act has already been adopted as regards 75 per cent.* of the population, and a great many recommendations had come from all parts of the country in favour of it. As regards expense, Mr. Samuel was successful in obtaining a grant in respect of this expenditure from the Treasury, and the balance that would fall on local

authorities and on the rates was small. He had always held strong views about allowing burdens to fall on the rates with regard to work which would benefit the nation as a whole ; such expense should be borne by the State. But he was bound to say that in this case the bargain was a fair one. The whole nation would derive benefit by the strengthening of its men and women and the different localities would always benefit. By caring for the children, they were, therefore, doing something that would reduce the rates of the locality, because a healthy people cost the rates less than an unhealthy people. The rates, therefore, should bear a share. The State, on the other hand, obtained the advantage of a more virile and healthy population than could otherwise be the case. At present it was practically impossible to pass controversial legislation. The House of Commons, in the main, if not in entirety, was thinking wholly of the war, and how the war might be brought to such a conclusion as every patriotic citizen would wish. While controversial legislation was impossible, he had reason to believe that a Bill on the lines suggested and he had indicated would not be opposed. It would be non-controversial. The subject was of the greatest importance, and it would give him great pleasure to put such a Bill before Parliament.



New Water Supply and Drainage Schemes.

[ASSAM.]

We are obliged to the Sanitary Commissioner of Assam for the following statement of new Water Supply and Drainage Schemes in Assam. The statement shows the stages reached on the 15th May 1915, by the several Schemes.

Urban Water Supply and Drainage Schemes in Assam.

Serial No.	Name of Town.	Nature of Scheme.	Present stage of the Schemes as on 15th May, 1915.	Amount of estimate.
(i) Schemes for which plans and estimates are ready.				
1.	Silchar	Water works ..	Detailed plans and estimates have been sanctioned by Govt. The contract for the construction of the work has been given to Messrs. James Simpson & Co., Calcutta. Materials are being collected ..	Rs. 1,32,768
2.	Sylhet	Do. ..	Detailed plans and estimates have been sanctioned. Tenders for the contract are invited ..	2,00,382
3.	Tezpur	Do. ..	Proposals for financing the scheme have been approved by Govt., and the detailed plans and estimates have been sanctioned by the Sanitary Board. Tenders are being invited for the execution of the work ..	99,998

4.	Dhubri	..	Do.	..	The work is in progress	..	58,065
5.	Golaghat	..	Water supply	..	The earthwork has been completed. Water lifting apparatus remains to be completed	..	28,338
6.	Jorhat	..	Water works	..	Construction has been completed	..	1,20,915
7.	Cherrapunji	..	Do.	..	Construction has been completed	..	11,562
8.	Gauhati	..	Drainage	..	(1) Pucca drains for a portion of the town, the estimate for which amounts to Rs. 93,513. This has been approved by Government	..	32,127
					(2) General drainage scheme, the estimate for which amounts to Rs. 8,614. The project has not yet been approved		
9.	Mangaladai	..	Do.	..	The question of financing the scheme is now under the consideration of the local authority	..	9,097
10.	Nazira	..	Do.	..	The scheme has been sanctioned by Government. The work on the construction of two tanks will be taken in hand after the rains	..	8,200
11.	Karimganj	..	Combined Water supply and drainage	..	The proposal for financing the scheme is now engaging the attention of the local authority and the Commissioner..		70,268
12.	Dibrugarh	..	Water supply	..	The rough plans and estimates together with the proposals of the local authority for financing the scheme has been submitted to Government. Orders of Government are awaited	..	1,66,000
13.	Dibrugarh	..	Drainage	..	Do.	do.	76,606

(ii) Schemes for which plans and estimates are under preparation.

14.	Jorhat	..	Drainage	..	The Sanitary Engineer is preparing plans and estimates..	Not available.
15.	Lumding	..	Anti-malarial	..	Plans and estimates are under preparation	Do.

(iii) Schemes under investigation.

16.	Goalpara	..	Water supply	..	The Sanitary Engineer has been asked to prepare a rough project on the lines of the suggestions of the Deputy Sanitary Commissioner's inspection note.	Do.
17.	North Lakhimpur..	..	Drainage	..	The Sanitary Engineer has been asked to make a survey of the drainage of the town and prepare plans and estimates for filling up insanitary tanks in the town. ..	Do.

Rural Water Supply Schemes.

Serial No.	Name of Sub-Divisions.	Nature of Scheme.	Present stage of the Schemes as on the 15th May 1915.	Amount of Estimate.
1.	Silchar ..	Improvement of Water supply ..	Scheme for the improvement of rural water supply by means of protected tanks and wells has been prepared. The cost has been spread over a period of five years commencing with the year 1915-16. The grant for the current year has been made to the Local Board.	Rs. 53,255
2.	Hailakandi ..	Do.	Do.	43,570
3.	North Sylhet ..	Do.	Do.	43,938
4.	Habiganj ..	Do.	Do.	66,286
5.	Sunamganj ..	Do.	Do.	56,355
6.	Karimganj ..	Do.	Do.	50,673
7.	South Sylhet ..	Do.	Do.	15,000
8.	Dhubri ..	Do.	Do.	1,00,752
9.	Goalpara ..	Do.	Do.	63,094
10.	Gaubati ..	Do.	Do.	24,350
11.	Barpeta ..	Do.	Do.	77,783
12.	Tezpur ..	Do.	Do.	75,000
13.	Mangaldai ..	Do.	Do.	80,874
14.	Nowgong ..	Do.	Do.	98,793*
15.	Sibsagar ..	Do.	Do.	77,000
16.	Jorhat ..	Do.	Do.	47,866
17.	Golaghat ..	Do.	Do.	56,280
18.	Dibrugarh ..	Do.	Do.	58,500
19.	North Lakhimpur..	Do.	Do.	30,000

* Including special scheme for Kallang area.

Sewage Disposal.

Royal Commission Report.

THE Royal Commission on Sewage Disposal have just issued as their final report a general summary of the conclusions and recommendations contained in the nine reports already submitted as the results of an enquiry which has extended over a period of sixteen years. Accompanying this is their ninth report, which deals with the disposal of liquid wastes from manufacturing processes and the disposal of domestic refuse in rural areas. In regard to the first question, the Commission say that, as the result of experiments and observations at works, they found that efficient means of purification were available in the case of some, but not all, trade liquids. Many wastes, the impurities of which were mainly in solution, could be considerably improved by clarification, but could not, in the present state of knowledge, be thoroughly purified. Hence the requirement of the existing law that trade wastes should, subject to certain conditions, be rendered harmless, was in many cases impracticable and the authorities charged with the duty of administering the law had to exercise their own discretion in regard to the degree of purification to be demanded of manufacturers. The Commission considered, therefore, that, as in case of sewage effluents there should be prescribed for trade effluents a standard of purity which should at once be a guide to the administrative authorities and a security to manufacturers in regard to the extent of their obligation. They found further, that, owing to the wide differences in the character of the various trade wastes, it would be necessary to consider each kind of trade waste separately, with a view to suggesting an appropriate standard. The Commission think a single standard for each trade would suffice, with provision for raising or lowering it in exceptional cases.

For the purpose of suggesting standards for the different trade wastes, the Commission classify the wastes as follows :—

- (a) Those for which efficient purification is practicable.
- (b) Those for which efficient purification is not in the present state of knowledge practicable.

In Class A they include waste liquors resulting from :—

1. Coal washing, tin mining, lead and zinc mining, china clay works, stone quarrying, stone polishing, wood-pulp paper work. In all these cases, adequate reduction of solids in suspension may be regarded as efficient purification.

2. Brewing, malting, distilling, tin-plating, galvanising, wire drawing, shale oil distillation, wool scouring, tanning, leather dressing, fellmongering, dairying. In these cases dissolved impurities should also be removed.

In Class B the Commission include waste liquors resulting from :—

1. Bleaching, waste bleaching, paper works (except where paper is made from wood-pulp only), cotton dyeing, cotton printing, woollen dyeing, woollen piece and yarn scouring with dye liquor.

2. Sulphite cellulose manufacture, gas and coke production.

It is pointed out, although no practicable means are known for rendering completely harmless the liquids included in this class, nearly all of them can be and are considerably improved by clarification. The Commission have placed sulphite cellulose and gas liquor in a separate sub-division, because they are not aware of any method of so treating them that the effluents could properly be discharged direct into streams. They think it impossible to lay down, as regards each trade, such a standard as would ensure the complete purification of rivers, since in the present state of knowledge, the attainment of such a standard would in many cases be financially impracticable and therefore useless. They have thought it

useful however, to suggest limits of impurity which they believe now to be practicable, and are based on careful consideration of data obtained. These figures, it is considered, will afford guidance to the central authority when established, and although provisional, and based upon the present condition of knowledge, should, if prescribed, remain in force for a definite period. At the end of that period they would be subject to revision, since admittedly they are inadequate to prevent pollution of streams, and improved methods of treatment may meanwhile have been discovered. The Commission think that in coal washing the effluent should not contain more than four parts of suspended matter per 100,000. For tin, lead, and zinc mines, china clay works, stone quarries, and stone polishing works, they suggest provisionally a standard of six parts per 100,000, but if it can be shown that no damage is caused by the discharge of the waste waters without treatment the standard might be relaxed or wholly dispensed with. In the case of paper mills where wood-pulp alone is used, the Commission propose not more than four parts per 100,000.

For breweries and maltings it is suggested the effluents should not contain more than four parts per 100,000 and should take up not more than four parts per 100,000 dissolved oxygen in five days.

A standard of three parts suspended solids and two parts dissolved oxygen absorption in five days is recommended in the case of distilleries, this corresponding with the general standard which the Commission have suggested for sewage effluents.

In tin plating, galvanising, and wire drawing a standard of six parts per 100,000 suspended solids is suggested. The standards suggested in the case of shale oil distillation are four parts per 100,000 suspended solids and four parts per 100,000 dissolved oxygen absorption in five days.

The Commission consider that wood-scouring liquor should be looked upon as a sewage and purified biologically.

They are of opinion this is practicable at a reasonable cost, and subject to their conclusion being verified by experiments on a large scale, they recommend a standard of four parts dissolved oxygen absorption in five days. Pending such experiments, they would suggest clarification down to six parts of suspended solids per 100,000.

For tannery waste, leather dresser's waste, fellmongers' waste, and dairy waste, the standard suggested is four parts suspended solids and four parts dissolved oxygen taken up in five days.

The proposed standard in the case of bleaching, waste bleaching, paper works (esparto and rag paper—esparto and wood-pulp paper) and paper works (brown paper and wall paper) is six parts of suspended matter per 100,000. As regards cotton dyeing and cotton printing, the Commission suggest as standards four parts suspended solids for cotton dyeing and six parts for the liquor from print works.

The Commission are unable to suggest a standard appropriate to the waste liquor from the manufacture of sulphite cellulose, but they think that neither the liquor itself nor the first washings should be discharged into a stream. They are unable, also, to suggest a limit of purification for gas liquor. While the Commission do not recommend that a complete set of standards should be prescribed for all known kinds of trade waste, they think it eminently desirable that a general standard should be prescribed in all cases where its efficacy and practicability have been in some measure tested by experience. In the case of some trade wastes, additional standards may have to be imposed, for example, standards of hardness and of 'caustic' alkalinity or acidity, or a requirement of neutrality, for the effluents from various branches of the cotton woollen and paper trades, and from metal works; a standard for arsenic or other poisonous metal for trades in which those substances are used or mined; an oil film standard for the wastes from oil or gas, grease, soap works, and so forth.

Government Orders & Notifications.

[United Provinces.]

THE Local Government has, in exercise of the powers conferred by clauses (a), (s), (r) and (x) of sub-section (1) of section 56 of the United Provinces District Boards Act, 1906, made the following rules to regulate and control the powers of district boards and to prescribe their duties in the matter of vaccination and epidemics, the conditions of appointment, pay and other matters connected with the assistant superintendents of vaccination and vaccinators employed by the boards, and generally for their guidance in matters connected with the carrying out of clause (u) of sub-section (1) of section 42 of the said Act:—

Vaccination and Epidemics.

1.—An assistant superintendent of vaccination is a servant of the Government lent to the board. He is appointed by the Sanitary Commissioner; his promotion in the sanctioned grades is made by the Sanitary Commissioner upon consideration of the reports of the board and of the civil surgeon and is transferred, when necessary, by the Sanitary Commissioner upon consideration of such reports and of the wishes of the boards.

The scale of pay fixed for the assistant superintendent is as follows:—

			Rs.
1	Assistant superintendent, 1st grade	...	100
1	Ditto ditto	...	75
2	Assistant superintendents, ditto	...	50 each.
4	Ditto ditto	...	40 „
17	Ditto 2nd grade	...	35 „
24	Ditto 3rd grade	...	30 „

An assistant superintendent of vaccination shall, when on tour, receive a horse allowance not exceeding Rs. 15 a month, subject to the conditions governing the grant of a similar allowance to Government servants of the same class.

2.—A vaccinator appointed before 27th November, 1906, is a servant of the Government lent to a board. Otherwise, a vaccinator shall be appointed by the board, and shall ordinarily be a resident of the district in which he is appointed. The board alone has authority to promote, transfer, suspend, punish or remove, or to grant or authorise the grant of leave to a vaccinator but in exercising such authority it shall consider the recommendation of the civil surgeon.

The board shall maintain apprentices on Rs. 7 a month to the number of one for every eight vaccinators. The apprentices shall be trained by the assistant superintendents, and examined and certified by the civil surgeon as laid down in rule 3, before they are appointed as vaccinators in the district.

3.—The board shall not appoint any person to be a vaccinator unless—

- (i) he has resided in the United Provinces for at least three years ;
- (ii) he knows one form of the vernacular (Urdu or Hindi) and is able to read the characters of the other form whether in print or script ;
- (iii) he possesses a certificate of qualification granted by the civil surgeon.

I hereby certify that I have examined ----- and find him qualified for the office of public vaccinator.

DATED AT _____, } _____
The of 19 . } *Civil Surgeon.*

Before granting such certificate, the civil surgeon shall be assured of the soundness of the candidate's knowledge in regard to—

- (1) the vaccination operation ;
- (2) the characteristics of a good vesicle and cicatrix ;
- (3) the chief symptoms of small-pox disease ;
- (4) the collection and preservation of lymph.

4.—The scale of pay for vaccinators shall be—

	Rs.
Vaccinators with less than 2 years' service (probationary) ...	8
Ditto 3rd to 5th year ...	9
Ditto 6th to 11th year ...	10
Ditto 12th and 13th year ...	11
Ditto 14th to 16th year ...	12
Ditto 17th year ...	13
Ditto 18th and 19th year ...	14
Ditto 20th to 23rd year ..	15
Ditto after 23 years' service ..	20

5.—The board may reward a vaccinator on the recommendation of the civil surgeon.

6.—The Sanitary Commissioner may, with the consent of the boards concerned, arrange for the transfer of vaccinators from one district to another. In so doing, he shall ordinarily arrange that a vaccinator may be employed in the district in which he resides.

7.—A vaccinator or assistant superintendent desiring leave shall apply to the board through the civil surgeon, but the grant of leave to an assistant superintendent shall be subject to the approval of the Sanitary Commissioner. A vaccinator or assistant superintendent shall not leave the district in which he is employed without first obtaining the leave of the board except in cases of casual leave which may be sanctioned by the district superintendent of vaccination.

8.—Every vaccinator shall be attached for two months for duty at the civil hospital at head quarters in some year early in his service. Such duty shall, as a rule, be for the months of August and September. The assistant superintendent and the board's head clerk shall maintain jointly a register showing those vaccinators who have been so attached and those who have still to be attached for duty.

9.—During his two months of hospital duty a vaccinator shall attend the hospital daily during the hours fixed by the

civil surgeon, and shall conform to the orders of the civil surgeon in regard to the performance of hospital duties.

10.—A vaccinator shall perform vaccination work from the 1st October to the 31st March, and at no other period except in the hill districts or on receipt of special instructions in consequence of an epidemic of small-pox. During the vaccination season a vaccinator shall not perform other duties except such testing of registration of births and deaths as is necessary for the furtherance of vaccination work and can be done without hindrance to that work.

11.—A vaccinator shall from the beginning of the vaccination season proceed systematically in one onward direction from village to village in his circle, and shall vaccinate all the unprotected in these villages. He shall ascertain from the village chaukidar's birth-register the names of all children born since the previous season, and shall vaccinate them all.

12.—At the time of vaccination a vaccinator shall enter the necessary details as to the persons vaccinated in his diary (vaccination form no. 1), and also in the village register in the form below (vaccination form no. 5).^{*} On the completion of each day's work in the village he shall hand over the village register to the chaukidar, but shall keep his own copy of the register (vaccination form no. 5A), always with him. The village register (no. 5), left with the chaukidar is intended for the information of district officers on tour who may inspect the vaccination work of the village.

The entry as to the result of the operation shall be made on revisiting the village after seven days.

13.—A vaccinator shall obey all rules and orders made by the Government in the provincial Manual of Vaccination or otherwise, and shall prepare all returns and forms so prescribed.

14.—A vaccinator shall ordinarily perform not less than 2,000 vaccinations in the season.

^{*} The forms have not been reproduced.

15.—Except in the vaccination season every vaccinator and assistant superintendent may, if necessary, be employed by the board upon sanitary and registration work, for the distribution of medicines in time of epidemic or of relief in times of scarcity, for the checking of vital statistics reported by the chaukidars, or for assisting in carrying out minor sanitary improvements which the board may be making in villages. The chairman may decide which vaccinator shall be employed on any work of this kind and for how long. A vaccinator shall be employed on such work ordinarily in or near his own vaccination circle.

16.—A vaccinator or assistant superintendent when employed on sanitary work in connection with cholera or other epidemic diseases of a dangerous character, on famine relief work, on duty at fairs outside the district in which he is permanently employed, or on hospital duty under rule 8, shall receive an allowance, in addition to his pay, at the rate of five rupees a month and ten rupees a month respectively, and he may receive travelling allowance for journeys made by rail while on such duty.

17.—A vaccinator shall examine and test the entries in the village chaukidar's birth and death registers and report any omissions he finds therein through the assistant superintendent to the district magistrate.

18.—Under the direction of the district magistrate the members and officers of the board may be required to test the accuracy of vital statistics in town areas or any rural area. They shall, if so required, report to the district magistrate the result of the test carried out in the form prescribed in the preceding rule.

19.—On January 15th in each year the chairman of the board shall furnish the Sanitary Commissioner with a return in the following form. In this return the results of testings for Act XX towns and villages having a population of

5,000 and upwards should be shown first. and then those of testings in rural tracts the name of each Act XX town and each village of 5,000 or more inhabitants in the district should be entered, and if in any town or village both the testings prescribed have not been made during the year, the reason should be briefly noted in the column of remarks. In showing the results of testings for rural tracts the name of each village need not be given. The total number of testings performed and omissions discovered by each class of officers should be entered.

20.—Vaccinators are required to sell quinine issued from the Aligarh Jail. and to remit the proceeds to the civil surgeon.

21.—When an epidemic occurs the assistant surgeon or sub-assistant surgeon in charge of a dispensary shall, so far as he can spare the time, visit the houses of persons in the vicinity who are suffering from the disease. For places beyond the reach of the dispensary officer, the board shall employ vaccinators to distribute medicine.

22.—The Sanitary Commissioner may, in case of necessity at a fair or on other occasion, call for vaccinators from the board for special service at any time during the year. In such an event the salaries of the vaccinators shall not be paid by the board; but the salaries and a deputation allowance to each vaccinator shall be paid from provincial funds, or, if the special service is for another local body, then from the funds of that body.

23.—The following statement of measures to be taken for the prevention of the spread of cholera, in the Benares, Gorakhpur, Lucknow and Fyzabad divisions, is appended for the information of all district boards:—

Notification of cholera.

I.—The mukhia and the chaukidar are both equally responsible for at once reporting to the patwari the occurrence

of any case of cholera or suspected cholera in their village or villages. If the patwari be absent from his circle the chaukidar shall proceed at once to the thana to report. It is part of the mukhia's duties to see he does so.

II.—The patwari on receiving this information or coming to know in any other manner of the suspected outbreak of cholera shall at once give a written report of the circumstances to the chaukidar, who shall immediately take it to the thana. The officer for the time being in charge of the thana shall at once send messages in green envelopes to the district magistrate, the civil surgeon and the tahsildar.

III.—The district magistrate shall on receipt of the news give immediate notice to the civil surgeon as well as to the authorities as laid down in paragraphs 2022 and 2031 of the Manual of Government Orders. The district board shall be liable to meet from its allotments for district epidemic charges any expenditure incurred in consequence of such action from the deputation of assistant or sub-assistant surgeons to the district or other emergent measures.

IV.—Where the district sanitary officer is within the limits of the district, the civil surgeon shall send information of the outbreak to that officer.

Measures to be taken by the civil surgeon.

I.—On receipt of the information of a cholera case the civil surgeon shall take immediate steps to depute vaccinators to proceed to the seat of the outbreak.

II.—The civil surgeon shall send with them a supply of cholera pills, permanganate of potash and medicines as laid down in the Manual of Government Orders, paragraph 2028.

III.—The civil surgeon shall when possible visit the cholera-infected village and advise the district magistrate as to the staff required in the event of an epidemic occurring. He should inspect the work of the staff placed on cholera duty.

Measures to be taken in rural areas.

I.—The distribution of 32 one-ounce packets of permanganate of potash shall be made through the tahsildar to each patwari.

II.—Every tahsildar shall in addition be supplied with a reserve stock of 10lb. of potash permanganate made up into ten separate packages, each containing 16 one-ounce packets of the drug for issue to patwaris or vaccinators and sub-assistant surgeons on special cholera duty.

III.—Civil surgeons should ascertain from magistrates the number of patwaris in the several tahsils of their districts, and shall arrange to have an adequate stock of permanganate of potash in hand for distribution to patwaris and tahsildars.

IV.—Head quarters dispensaries will also keep a reserve stock of 10lb. of potash permanganate, on which the tahsildar may indent in case of emergency and on which any sub-assistant surgeon or vaccinator placed on special cholera duty may also draw.

V.—On the issue of any of his reserve stock the tahsildar or medical officer in charge of a dispensary shall immediately indent on the civil surgeon for the amount expended. The civil surgeon should replace amounts issued to vaccinators and tahsildars by indent on Messrs. D. Waldie & Co., Cawnpore, for renewal of stock.

VI.—Patwaris must be made to understand clearly that after sending information to the thana as laid down in the first part of these rules they must proceed at once to the infected area and disinfect the wells with permanganate of potash and redisinfect them every third day till the epidemic has ceased or till relieved by the vaccinator.

VII.—(1) The district magistrate should arrange for the distribution of pamphlets to all patwaris, containing information as to the methods of avoiding infection of cholera.

The patwaris should be ordered to acquaint the villagers with the contents of the pamphlet. Leaflets explaining the method of disinfecting wells should also be distributed to patwaris.

(2) If the epidemic threatens to become serious in a defined area, the magistrate should at his discretion apply to the Inspector-General of Civil Hospitals for the services of a sub-assistant surgeon.

(3) In case of a severe epidemic within a fairly defined area, application should be made by the magistrate to the Commissioner for sanction to depute a tahsildar or naib tahsildar on special cholera duty.

VIII. If the epidemic does not rapidly subside, the civil surgeon should, when necessary, direct the nearest travelling dispensary in his own district to move at once to the infected area, reporting the fact that he has done so as a temporary measure to the supervising medical officer of travelling dispensaries. If further assistance is required, the Inspector-General of Civil Hospitals may be consulted with regard to the transfer of travelling dispensaries from adjoining districts.

Legislative Intelligence.

[Parliament.]

INFANT MORTALITY.—Mr. Lough asked the President of the Local Government Board whether his attention has been drawn to the increase of infant mortality both in London and throughout the country; and whether, having regard to the seriousness and urgency of this question in its relation to the problems created by the war, he can see his way to introduce and pass as an uncontentious measure a Bill which, by the more stringent enforcement of the prompt registration of births, the greater safeguard of the health of mothers, the establishment of public creches, or other methods, may tend to abate this evil?

MR. LONG: I am fully aware of the importance of this matter, and, as I intimated to a deputation on Thursday last, I am anxious to introduce without delay a measure making the Notification of Births Act of general application and conferring certain powers on local authorities for safeguarding the health of infants and expectant mothers. I shall be very glad if honourable members will co-operate with me in securing the unopposed passage of the Bill.

[Bombay.]

At a meeting of the Bombay Legislative Council held on the 14th July, 1915, at Poona, the Hon'ble Mr. V. J. Patel moved the following resolutions: (1) The Council recommends that the Governor in Council may be pleased to direct that the number of elective members on those Taluka and District Local Boards in the Presidency which have been in existence for 25 years or upwards shall be not less than two-thirds of the whole Board. (2) The Council recommends that the Governor in Council may be pleased to direct that the Presidents of those Taluka and District Local Boards in the Presidency which have been in existence for 25 years or upwards shall be elected by such Boards.

The Hon'ble Sir Prabhashankar Pattani explained that the fact that Government themselves were taking action in the matter was a guarantee that the question would receive sympathetic consideration at the hands of Government. He, however, thought that merit and good work should be the criterion for judging the claims of the Boards for the conferment of privileges. He, therefore, suggested that the resolutions might be modified so that Government might accept the recommendation. The resolutions were accordingly modified in the following form and accepted by Government: (1) "This Council recommends that the Governor in Council may be pleased to consider whether the number of elective members on those Taluka and District Local Boards in the Presidency as the Governor in Council may seem fit be not less than two-thirds of the whole Board." (2) "This Council recommends

that the Governor in Council may be pleased to consider the desirability of directing that the Presidents of those Taluka and District Local Boards in the Presidency as the Governor in Council may think fit be elected by such Boards."

The Hon'ble Mr. Patel also moved that "this Council recommends that the Governor in Council may, under subsection 2 (c) of section 23 of the Bombay District Municipal Act of 1901, be pleased to direct that every President of a City Municipality in the Presidency shall be elected by such Municipality."

Sir Prabhashankar Pattani pointed out that Government would accept the resolution if the Hon'ble Mr. Patel would modify it so as to read that "this Council recommends that the Governor in Council do consider the desirability of directing, &c."

After some discussion, the Hon'ble Mr. Patel agreed to the modification and the resolution was accepted by Government in the modified form.

Some Recent Publications.

LEGAL PRINCIPLES OF PUBLIC HEALTH. By H. B. Hemenway. Price \$7.50.

THE CITY PLAN. (Published quarterly as the official organ of the National Conference on City Planning.)

[Vol. I. No. 1. 25 cents a copy].

TOWARDS RACIAL HEALTH. A Handbook for parents, teachers, and social workers on the training of boys and girls. By N. H. March, B. Sc., M. R. San. I. Price 3s 6d.

Guide to the Reports, Evidence and Appendices to the Royal Commission on Sewage Disposal. By G. BERTRAM KERSHAW, M. Inst. C. E., F. R. San. I., F. G. S., Engineer to the Commission. Price 55.

Practical Points.

[The questions of subscribers only are answerable in the Gazette. The name and address of the subscriber must accompany each communication which must be legibly written.]

11. *Resignation of Councillor. Validity of Acts done by him after resignation—Withdrawal of resignation.*

(1) When a Councillor of any Municipal Committee resigns by tendering his resignation in writing, is he entitled to act as such Councillor during the time until his resignation is accepted by the Council, where it is necessary that it should be so done?

(2) Secondly, can he legally withdraw his resignation after once he had tendered it?

ANSWER. The answer depends on the wording of the various Municipal Acts. (See Sec. 36 of Mad. Act III. of 1904; Sec. 27A of Beng. Act III. of 1884; Sec. 18 of Mad. Act IV. of 1884; Sec. 14 of N. W. P. Act I. of 1900; Sec. 9 (4) of C. P. Act XVI. of 1903; Sec. 15 of Punj. Act III. of 1911; Sec. 10 of Bur. Act III. of 1898. See also Sec. 36 of the English Municipal Corporations Act, 45 & 46 Vict. C. 50). Generally, it may be stated that the resignation binds the giver of it, that he has nothing further to do in the matter, that he cannot act as a Councillor during the interval between his tendering of resignation and the acceptance thereof and that the resignation cannot be withdrawn even with the consent of the Council. See *Pease v. Lowden*, (1899) 1 Q. B. 386; *Reg. v. Wigan Corporation*, 49 J. P. 372=14 Q. B. D. 908.



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[1915

Inelasticity of Local Revenues.

IT is now recognised by everybody who has given thought to the subject that the resources of local boards are utterly inadequate to meet efficiently the growing expenditure on the many useful functions which they have to discharge. Everybody who has had any experience of the actual administration of local boards—including non-official presidents of Taluk Boards—is aware of the huge discrepancy that now exists between insistent needs and available resources. These needs are bound to increase and it is unnecessary to state the proposition that unless we find ways and means of substantially adding to these resources, the needs must remain unsatisfied or inefficiently served. Local bodies have come to depend largely on subsidies from Government. The disadvantages—financial and administrative—of a system of grants in aid, to the extent that are fitful and non-recurring, need not be discussed here. But for these grants in recent years, rural boards would not have been able to finance most important measures of sanitary, educational and other improvement. Few boards in this presidency now provide anything, out of their own resources, for opening new schools, constructing school or hospital buildings, improving water supply or constructing bridges or culverts. The money required for these and similar objects is always *expected* from provincial revenues and, unless it comes, these works have to remain unattended to. The result is that roads in most districts are not as well kept as they ought to be in spite of

their being reputed to be in good or fair condition in administration reports: village communications are neglected; many schools are unhoused; a large number of culverts and bridges in several districts are in a condition of disrepair, the necessary repairs to these and other masonry constructions being impossible for want of funds. Large strides remain to be taken in the field of elementary education and rural sanitation. These considerations call for immediate proposals for augmenting local resources.

The Decentralisation Commission failed to suggest any practical measures in this direction. And though, in their recent resolution on Local Self-Government Policy, the Government of India recognised that the foremost obstacle in the way of further progress was the "smallness and inelasticity of local revenues," they have given no indications of how this obstacle should be removed and local revenues made more elastic. In the July number of the *Local Self-Government Gazette*, the Hon'ble Dr. T. M. Nair has referred to this question but has contented himself with the general proposition that "local bodies can only be financed by a combination of systems of direct grants, assigned revenues, local taxation, municipal trading and so on" and "that before local bodies are established in a satisfactory financial condition, the incidence of imperial and local taxation should be definitely fixed."

It is the purpose of this article to suggest a source of revenue which, while bringing in a substantial addition to local revenues, is unobjectionable from many points of view. It must be premised that this suggestion is not intended to make it appear that additional taxation is the only remedy for improving local finance. Help to local bodies has to come in the shape not only of adding to taxation of a local character but also of relieving them of a substantial portion of their expenditure. There are services at present local, which ought to be entirely provincialised; there are others the expenditure

on which should be shared in a fairer proportion than now between provincial and local revenues. There is, however, no use blinding one's eyes to the fact that, even after these just transfers of burdens are made, local boards will still need an augmentation of their receipts in the shape of additional taxation.

The three main heads of local receipts in this presidency at present are land cess, provincial grants and tolls. During the year 1913-14, the receipts from each of these sources were as follow :—

					Rs.
Land Cess	...	...	...	...	68,68,402
Provincial Grants	...	...	...	...	40,38,751
Tolls	...	..	..	...	13,09,058

Let us examine whether any of these three items could be made to contribute a substantially larger amount than now.

Taking the land cess, it is now levied at 1 anna in the rupee of land revenue in all districts except the Nilgiris, Malabar and South Canara. It works out to $6\frac{1}{4}$ per cent. of the land revenue and is analogous to the "centimes additionels" on the "contribution foncière" in France. A proposal to raise the maximum rate of the land cess from 1 to 2 annas in the rupee which was made by the Coimbatore District Board has been widely discussed recently. While it is unnecessary to associate oneself with the indiscriminating chorus of condemnation which rose from almost every platform at which the proposal was discussed, one has at the same time to recognise that before the land cess is enhanced certain conditions have to be satisfied. These are mainly two, viz.,

(1) Land cess should not be enhanced unless it is impossible to find any other source of taxation. The reason for this condition is that land is already heavily taxed both for general and local purposes and bears more than its due proportion of the burden of taxation.

(2) Land cess should not be enhanced unless the proceeds of the enhanced part of the cess are spent on areas more strictly local in character than a District or Taluk Board. In other words, it should be spent on the village where it is raised and should more nearly conform to the direct benefit theory of taxation.

The figure under provincial grants shows how liberally Government have come to the assistance of local boards. But the very liberality of these grants is an unsettling factor in local budgets and the question will soon have to be settled as to (1) how far local services should be entirely provincialised and (2) how far these grants should be converted into shares of growing revenue.

The receipts from tolls bring in, no doubt, a considerable income but are not capable of any substantial improvement. At nearly two-thirds of the gates in the presidency, the maximum rates are levied at present and the maximum is already a heavy tax on vehicles.

We are thus compelled to discover some other source of additional local taxation.

Next in importance, to land revenue in this presidency is the revenue from abkari and opium. During 1913-14 (fasli 1323) while land revenue yielded Rs. 6,74,00,322, abkari and opium were responsible for Rs. 3,64,16,430. Why then should not the principle of the "centimes additionels" be applied to the latter item also? If, for example, we imposed a cess of one anna in the rupee of abkari and opium revenue, we would realise for the benefit of local revenues the considerable sum of Rs. 21,28,117. (*Vide* p. 698.)

The abkari revenue, roughly speaking, is a tax on consumption or expenditure. Taxation of expenditure is objectionable only where it falls on necessities of life like salt. It is not only unobjectionable but justified by high moral considerations when it falls on superfluous luxuries, the consumption of which is detrimental to the health—bodily,

intellectual and moral—of the consumer and of his progeny. Both the state and temperance reformers are agreed that the tax on liquor and intoxicating drugs in this country should be high enough to discourage their consumption. Toddy, country spirits, ganja and opium are thus fit objects for throwing additional burdens on. As Dr. Pierson points out in his book on Economies, "Nobody has reason to complain when he is heavily hit by such duties for he can avoid their incidence if he likes." Abkari revenue, whether it is in the shape of shop rents, tree-tax or duties on the manufacture of the particular article, is ultimately shifted on to the consumer and so long as our policy is to secure "a minimum of consumption," the enhancement of these items is not open to the same objections as, for instance, the enhancement of the burden on land. As far ahead as we can think of, the drunk habit is bound to continue and it will be a long time before it ceases to exist altogether. Pursuing a policy, therefore, of securing the maximum of revenue consistent with the minimum of . . . a cess on abkari revenue must bring in a not inconsiderable sum in aid of local resources. It is also unnecessary to fix the maximum of the abkari cess at $6\frac{1}{2}$ per cent only of the abkari revenue, on the analogy of the land cess. The maximum may be fixed fairly enough, for the present, at 10 per cent of the abkari revenue, district boards being given power to vary the rates according to their needs within this limit.

That the items composing the abkari revenue are capable of bearing additional burdens is being demonstrated almost annually. Every year, shop rentals are going up. Government have also at very frequent intervals been enhancing tree-tax, duties on country spirits and the issue prices of ganja and opium.

An abkari cess will also possess the obvious advantage that it will be collected by Government agency and that local boards will not have to bear any cost of collection. It will not be quite a new idea, for such additions to the state liquor taxes

are levied for local purposes on the continent of Europe. There is also an appropriateness in making toddy, liquor and drugs contribute to local receipts. A good slice of these receipts has to be spent on education and it is only by means of widespread education and the growth of a higher moral sense in consequence thereof that the drink habit can be most efficiently combated.

A table showing, in the case of each district board in the Presidency, its receipts from land cess, tolls and provincial grants during 1913-14 and comparing them with what they could have realised in the shape of an abkari cess at $6\frac{1}{4}$ per cent of the abkari and opium revenue of the same year is also appended. We invite a free discussion of this suggestion.

District Boards.	Income from land cess.	Tolls.	Contribu- tions from Provincial Funds.	Abkari cess at 1 anna in the rupee of abkari and opium revenue.	
1	2	3	4	5	A. P.
	Rs.	Rs.	Rs.	Rs.	
Anantapur	1,05,119	18,819	1,48,135	79,090	2 0
Arcot (North)	1,98,536	16,405	1,54,143	1,39,527	1 0
Arcot (South)	3,13,202	1,42,550	1,95,325	1,64,527	7 0
Bellary	1,48,333	24,286	1,48,444	96 183	1 0
Canara South	2,41,908	53,666	2,36,561	55,509	13 0
Chingleput	1,90,874	58,567	1,07,799	1,15 875	15 0
Chittoor	1,42,723	21,870	1,51,922	48,699	11 0
Coimbatore	2,70,540	1,93,690	1,47,033	1,18,354	4 0
Cuddapah	1,26,571	13,497	1,12,293	37,922	14 0
Ganjam	3,54,355	26,930	1,76,457	59,254	13 0
Godavari	5,16,406	15,841	2,51,573	1,03,022	9 0
Guntur	5,56,512	..	1,74,473	66,073	5 0
Kistna	7,43,228	38,260	2,65,459	1,39,153	14 0
Koraput	42,944	22,311	51,450	..	....
Kurnool	1,80,468	17,566	1,19,132	80,165	5 0
Madura	2,52,905	1,07,080	1,23,373	79,321	3 0
Malabar	2,84,293	1,23,674	2,41,570	77,834	9 0
Nellore	3,38,364	11,935	1,38,045	39,704	10 0
Nilgiris, The	12,667	31,727	27,867	33,111	4 0
Ramnad	2,37,689	50,210	1,43,711	53,521	3 0
Salem	2,13,688	65,415	2,09,384	1,02,394	6 0
Tanjore	4,56,644	20,374	1,76,867	1,91,181	11 0
Tinnevely	2,36,382	74,172	97,128	59,749	15 0
Trichinopoly	2,42,027	1,08,789	1,32,359	1,07,372	15 0
Vizagapatam	3,61,374	51,424	2,12,643	80,665	14 0
TOTAL..	58,68,402	13,09,058	40,38,751	21,28,117	12 0

The Nagpur Water Works.

[BY SIR B. K. BOSE, *Kt*, VICE-PRESIDENT.
MUNICIPAL COMMITTEE, NAGPUR.]

WE wonder how many of those who at a gentle pressure of their water-tap find a copious supply of pure drinking water bubbling out ready for use know the history of the works which enable them to enjoy this one of the most beneficent Municipal institutions of this town. And that history has some interesting features and is well worth narrating. This I shall attempt to do in the following paragraphs.

2. Of the two systems which now supply the town, Ambajheri and Gorewara, the former is by far the more ancient. Ambajheri was no new discovery of these later days. Its waters were dammed up and led to the city long before the country came under British rule. Beautiful lake, the bund and the supply from it were originally the work of the Bhosla rulers of Nagpur, constructed more than a century ago. To quote the words of a former Chief Commissioner, "the men of the time were certainly not expert in puddle walls; they had of course no iron pipes. knew little of valves and syphons and cared less about filtering tower. But nevertheless in their own simple way, they managed to supplement effectively the water supply of the city as it then was; and we have still in the Telinkheri conduits a sample of the way in which they did their work. What an eye for country those old Marathas had! Look at their great tanks and lakes. What an instructive appreciation they show of the essential conditions of water storage! Not Ambajheri and Telinkheri alone, but thousands of similar works in the Nagpur Division remain as witnesses of their skill. Think for a moment of the old Chimna Patel of Nawegaon, a simple village headman, whose descendants to this day till their ancestral fields. I camped last Christmas on those two short bunds of his—marvellously short for the work they do—by which he impounded the waters of a score of hills, and

created that lovely lake, with a circumference of 17 miles, that not only charms the passing visitor, but spreads fertilising streams over large areas of surrounding cultivation. What a heaven-born engineer that old man was. And there were scores like him, who, as they potted round the valleys in their huge red pugris, or raced to markets on their bullock chakras, took in correctly by the eye alone the contours of the country and the courses of its streams, and turned their rough reconnaissances to practical account."

3. Ambajheri gave water to only a very small portion of the town. For the main supply the people depended on wells. According to an official return made in 1864, out of 1,231 wells sunk in the basaltic and metamorphic rocks on which the city stands, about 900 gave brackish water, and even those yielding fresh water were in many cases found to be contaminated. The result was that diseases which flourish on an impure water supply had taken a permanent abode in the city and epidemics of cholera were by no means few and far between. 1869 was a year of great drought and even the well supply then largely failed. This drew special attention to the precarious character of the Nagpur Water-supply. To remedy this most unsatisfactory state of things, so full of danger to the health of the people and the future prosperity of the town, Mr. (afterwards Sir John) Morris, then Chief Commissioner, invited the Municipal Committee to consider the question of giving the people a supply of wholesome drinking water, offering to help them with expert advice and also pecuniary aid from the State funds. Mr. (afterwards Sir Alexander) Binnie, C.E., was deputed by the Local Government to prepare a scheme. After examining various projects, he decided in favour of remodelling, improving and enlarging the old reservoir at Ambajheri. It may be pointed out here in passing that what has now developed into the Gorewara scheme was one of those which came under consideration. It was then known as the Sitagondi project. It was rejected on account of its great cost, beyond the then means of the Municipality.

4. Ambajheri is a natural depression in the hills surrounded on three sides by high banks, down which the rain water used to rush and then overflow in the form of a stream known as the Nag Nadi, into the low lands below. By throwing a masonry embankment 2,550 ft. in length across the valley of this stream, the truant water was impounded and turned into a lovely lake. The reservoir when full had an area of 237 acres and contained about 80,000,000 cubic feet of water, enough for the purpose which it was intended to serve.

5. The reason for the selection of Ambajheri was that the site was admirably suited for a reservoir. Above it there was a catchment area of nearly $6\frac{1}{2}$ square miles almost free from cultivation and but slightly covered with earth. It also afforded a most economic storage ground and its level and distance from the city were such as to enable gravitation works to be constructed within the means at the disposal of the Municipality. Mr. Binnie's scheme consisted of the following features:—

(a) A puddle trench through the old embankment going down three feet into the rocky floor of the valley.

(b) The raising of the old embankment by 17 ft. 4 inches above the level of the top of the face wall and a puddle wall constructed to within 3 ft. of the full height of the new embankment.

(c) A straining and regulating tower inside the tank and a syphon discharge pipe laid from it over the top of the old embankment and below the level of the newly raised portion.

(d) A new waste weir at a level 13 ft. 4 inches above that of the reservoir.

(e) A 13-inch mainpipe, 4 miles long with 10 miles of distribution pipes. The sanction of the Government to the scheme was received in April, 1870. Active operations were commenced in October, 1870 and the works were completed before the commencement of the monsoon of 1872. The new reservoir was capable of impounding a gross quantity of

257,500,000 cubic feet of water and an available storage of 240,000,000 cubic feet or 1,500,000,000 gallons, the top water area being about 370 acres. The total cost of the works, including a bungalow at the reservoir for the Overseer in charge and a road $2\frac{1}{2}$ miles in length to Nagpur, was Rs. 3,95,320. In this is not included the value of the old works (a portion of the embankment) which were utilized in the construction of the new embankment.

6. As stated above, the original scheme included a total length of pipe supply of 10 miles, out of which the length laid down up to 1883 was about 6 miles. Between 1883 and 1885, new extensions were made at a cost of about half a lakh making a total length of supply of about 14 miles. The scheme was intended to supply the whole of the city of Nagpur, the idea being to extend the piping year after year as funds would be available. But after the extensions mentioned above had been carried out, a dead-lock was reached. The Committee was informed by the Engineer in charge that owing to a larger quantity of water being drawn through the pipes than that for which they had been calculated, the head available at the reservoir was too small to overcome friction beyond the limits of the supply already laid and that no further extension was possible under the pure gravitation system. Later on, however, it was found possible to carry the supply to some of the localities where it was urgently needed at a cost of about Rs. 28,000. But here a complete halt had to be made.

7. According to the opinion of the Engineer, there was enough water in the tank to meet the requirements of the whole town and all that was needed was a new system to carry it to those parts, which could not be reached by the pure gravitation system. At first a small pumping scheme to supply the Civil Station costing about a lakh and a half with a service reservoir on the Sitabaldi Fort Hill was prepared, but the Committee decided in favour of a larger pumping scheme which would supply not only the Civil Station but also those

parts of the city which could not be served by the gravitation system. Plans and estimates amounting to a little over three lakhs giving effect to the Committee's decision were prepared and they were sanctioned in July, 1889. The main features of the scheme may be thus summarised :—

- (a) Raising the waste weir by 1 foot so as to increase the storage capacity of the tank and lengthening and widening the channel so that the flood level might not rise above 3 feet below the top of the dam and thereby endanger its safety. This was calculated to give an additional 15,395,000 cubic feet of water approximately equal, according to the consumption in those days, to a month's supply in the hot weather.
- (b) Carrying the water impounded in Ambajheri by gravitation during night so as not to interfere with the existing supply to the people through a new 13 inch main into an underground cistern or reservoir in the south-east corner of the old Residency near the junction of the Sitabaldi road with the great Deccan (Jail) Road.
- (c) Two steam pumps to lift the water from the above cistern through a rising main to a new service reservoir on the Government House Hill at the back of Sadar Bazar, commanding the highest point in the city.
- (d) A distribution system of nearly 14 miles of piping to carry the water to the required locality by gravitation from the service reservoir.

The underground reservoir was to contain 646,875 gallons as against an estimated daily consumption of 438,400 gallons. The service reservoir in the hill was to contain 571,875 gallons in two equal compartments. Besides supplying the people, the scheme provided for the supply of 60,000 gallons daily to the Bengal-Nagpur Railway. The works were completed in August, 1890.

8. Along with the introduction of the above high level system, steps were taken to acquire the whole of the land within the catchment area and to fence it with barbed wire. This was a necessary work to prevent pollution. It cost a lakh. The whole drainage area is now free of habitation and cultivation. It only grows grass which is annually auctioned.

9. Regarding the capacity of the tank to meet the growing needs of the town, the Engineer in charge placed on record the following opinion :—

“ In an ordinary time, by which I mean when the tank has been filled to weir crest in the previous monsoon, there is ample water for every requirement. In an ordinary year it will be sufficient to take such precaution as may be necessary to prevent the water level falling below 11 feet on the guage and thus retain the sure supply of 100 millions cubic feet at the end of the season. Should the monsoon fail and prove insufficient to fill the tank and compensate for the previous year's consumption, it will then be necessary to use every possible precaution to avoid waste and save water ”.

10. Within 9 years of the opening of the new works, the capacity of the tank to meet the requirements of the town was put to a severe test. The monsoon of 1899 failed to an extent never before experienced within the memory of the oldest inhabitant. The rainfall was a third of the normal and as there was not a single continuous heavy downpour, which alone fills the tank to any appreciable extent, it received practically no accession throughout the season. Thus the end of the monsoon of 1899 found the reservoir exhausted of a full year's supply and the question arose whether it was capable of bearing the strain of the consumption during the following 9 or 10 months before the next monsoon would fairly establish itself. It soon became apparent that the tank could not hold out till then. Distribution had to be cut down to 6 hours a day and later on even to 2 hours. By the end of June, 1900, the water-spread had shrunk to a veritable puddle. One

expedient that was resorted to to supplement the supply was to sink a well at the bottom of the bund where to catch and collect the subsoil water. Water percolating into this well was pumped into the 13 inches main. This added to the direct supply to some extent. But what saved the situation was the resurrection of the old wells, which, under the feeling of security engendered by the introduction of the Ambajheri supply, had been allowed to go out of repairs. With the tank supply reduced to a minimum and its failure to reach many parts of the town owing to want of head, the question of utilising the well supply assumed a great importance. The Committee took immediate steps to repair, improve and reopen about 700 of the old neglected wells. Pipe water was restricted to drinking purposes and for all other domestic purposes, well water was made available. Fortunately, the monsoon of 1900 opened at Nagpur with about 6 inches of rain in one night resulting from a cyclonic disturbance in the Bay, and this at once gave the tank several feet of water and thus the crisis was soon over.

11. Advantage was taken of the exposure of the bed during 1899-1900 thoroughly to clean it and deepen it in parts. Along with this, the embankment and the waste weir were raised by three feet at a cost to the Municipality of Rs. 16,500. The rest of the cost was borne by Government as part of the expenditure on famine relief, the non-technical part of the work being executed by famine labour.

12. That the high level system had met a crying want was soon made manifest by a large increase in consumption. It had been designed to meet a daily consumption of 4,38,300 gallons; but by 1910 the figure had gone up to 9,00,000 gallons, or more than double. To cope with this unexpected situation more powerful pumping engines were installed and a duplicate rising main from the pumping to the service reservoir was laid at a cost of Rs. 75,000. These works were completed in 1904.

13. *Pari passu* with the works mentioned above, the Committee steadily carried on the work of extending the distribution pipes and setting up new public hydrants in various parts of the town. Between 1st April, 1883 and 31st March, 1904, one lakh and fifteen thousand rupees were spent from the current income on these works, raising the entire length of piping to 2,19,000 feet and the number of hydrants to 355. Since then, Rs. 1,09,617 more have been spent in the same direction carrying the total figure of expenditure to Rs. 2,42,662, the total length of piping to 323,527 feet and the number of hydrants to 532.

14. Combining the various capital expenditures from the beginning, the following results are arrived at:—

(a)	Expenditure on the original low level system	Rs.
	... ..	3,95,320
(b)	Do. on the high level system	3,00,600
(c)	Do. in acquiring and fencing the catchment area	1,00,000
(d)	Do. on the second rising main and more powerful pumps for the H. L. system	75,000
	Total Rs.	<u>8,70,920</u>

These, except Rs. 5,000 out of the last item of Rs. 7,500, were met by loans from Government, repayable with interest by annual instalments; these loans have all been paid back except the last. The above sum of Rs. 5,000 was met out of the general revenues.

(e)	Expenditure on the extension of the distribution system from the introduction of the works to 31st March, 1883	Rs.
	... ..	18,045
(f)	Do. from 1st April, 1883 to 31st March, 1904	1,15,000
(g)	Do. from 1st April, 1914 to 31st March, 1915	1,09,617
	Total Rs.	<u>2,42,662</u>

These were met from the current income.

Grand total of the reservoir on the Ambajheri system :
Rs. 11,13,582.

15. Within 20 years of the introduction of the high level system,—which was thought at the time to have solved the water-supply question for more than a generation, the town witnessed great developments; there was brought into existence what has not inaptly been called a new Civil Station for the European official population. Similarly, what is practically a new town-let sprang up between old Sitabaldi and the Anjni Jail. It is known as Craddock Town and is principally occupied by Indians belonging to the higher middle class. There were great expansions of the Indian mohallas of the Civil Station besides the creation of a town-let for the Anglo-Indian community called Starkey Town. In the old city, to relieve the congestion in the busy business quarters of Itwari, a large area was acquired for town-planning purposes on modern lines. For the poorer classes, two model bastis were founded on the outskirts of the town. The combined effect of these improvements was that the data upon which the high level system was supposed to have met the requirements of the town for the following 30 years lost their relevancy and cogency. Consumption went up by leaps and bounds, with the result, as already stated, that the actual consumption was found to have more than doubled, thereby outrunning the capacity of the system to meet the demand. Taking the two systems together, the daily consumption in October, 1911, when, as will be explained further on, the Gorewara scheme began to work, was found to have been 1,900,000 gallons against 1,360,000 gallons, the maximum allowed for in the original project. Besides providing an adequate supply for the people, the question of meeting the requirements of the two railways, which have largely increased within recent years, had to be considered. Although not strictly bound to provide for them, yet, considering how the prosperity of the town was bound up with their smooth work-

ings, the Committee found it necessary to take their requirements into consideration. There was another factor in the case which also demanded attention. Juma Talao is a tank of considerable dimensions just at the entrance to the old town, the adjoining lands on its two sides being occupied by a teeming population working in the great Empress Mill and its annexes. This tank was constructed by the Bhosla kings at some remote time to intercept the waters of a nala that had its source in the hill, where the Government House now stands, before they reached the Nag Nadi. It was once a fine sheet of water, but within the past 30 years its catchment area has been covered up by residential buildings, and as a consequence the surface drainage during the rains enters it charged with the scouring of densely populated bastis. This process, continued year after year, has polluted its water and has made it very insanitary. If its principal source of supply were to be cut off, it would soon shrink into a puddle and would be incapable of meeting the requirements of the Empress Mill, which draws its supply from it. The Mill Company gives employment to 8,000 people and apart from all other considerations the maintenance of the Mill in full working order is a matter of great importance to the prosperity of the town. Now, the only effective method of improving the water of this tank would be to fill it to some extent with clean water from the Ambajheri system and thus make it partially independent of its natural but now impure source of supply. This could not be done when Ambajheri was not able to meet fully the legitimate demands on its resources.

16. The consideration set forth above forced the conclusion that the time had arrived to have a second and additional source of supply. The authorities took up the question in right earnest. The available sites for a storage reservoir were examined and one among the low hills to the north-west of Nagpur, near the village of Gorewara on the Kalmeshwar road, was found suitable for the end in view. The catchment area was found to be $11\frac{1}{2}$ square miles or nearly double that

THE NAGPUR WATER WORKS.

of Ambajheri. After several estimates had been prepared and examined, one amounting to 10 lakhs was finally adopted by the Municipality and sanctioned by the Local Government in October, 1910. Towards this expenditure, the Government made a grant of $2\frac{1}{2}$ lakhs, the balance being provided by the Municipality by means of a loan from Government as on all similar previous occasions.

17. The scheme contains storage, pumping and distribution by gravitation and its main features are given below :—

- (a) A storage reservoir at the village Gorewara with an earthen bank 2,350 feet long and 52 feet high at its extreme height impounding the waters of the surrounding hills and high grounds.
- (b) An outlet tower, with a 20-inch stand-pipe with bell-mouth branches through which the supply is drawn from as near the surface as possible and masonry culvert carrying the supply main from the tower to the outside of the dam.
- (c) A waste weir.
- (d) A pumping station to carry the water from the tank to the service reservoir.
- (e) Suction and rising main of 18-inch diameter and of the aggregate length of 12,370 feet connecting the tank and the service reservoir through the pumping station.
- (f) A service reservoir at the highest point of the Seminary Hill divided into two compartments capable of holding in all 1,000,000 gallons being the estimated daily consumption from this system.
- (g) Distribution system consisting of 18-inch steel gravitation main leading from the Seminary Hill reservoir to the old service reservoir on Government House Hill. Near the latter, three subsidiary pipes take off from this main as follows :

- 70 (i) A 10-inch pipe to the old reservoir itself,
 (ii) a direct 12-inch main to the city and
 11 (iii) a direct 7-inch main to the Civil Station.
 11 Including compensation for land taken up, wire fencing,
 1 approach roads, buildings for officials, &c., the total cost has
 been in round figures 9.79 lakhs, showing a saving of .21
 lakhs on the estimated cost of 10 lakhs. It has been decided
 to utilise some of this saving in having filtering beds to filter
 the water during the rains, when the earth from the catchment
 area enters the tank with the on-rush of the rain water after
 a heavy downpour. It may be pointed out here that the
 catchment area of this tank covers a much larger extent of black
 soil than the Ambajheri catchment area, most of which is
 rocky with slight admixture of earth here and there. The
 work was begun in February, 1909 and was to have been
 completed in 1912, but it was actually completed in October
 1911, when it began to work and supply water to the people,
 almost a year earlier than was anticipated.

18. Combining all the expenditure on Water Works from the beginning to the end of 1914-15, it would appear that a little over 20 lakhs twenty-two thousand rupees have been spent on them. This represents twenty-two years net income from octroi, which is the mainstay of municipal finance.

19. The present annual recurring liabilities on the Committee on account of the Water Works are as shown below :—

Annual instalment of the last of the	Rs.
Ambajheri loans	3,922
Do. of the Gorewara loan ..	54,834
Annual maintenance charge of the Ambajheri	
system	12,252
Do. of the Gorewara system ..	35,401
Land revenue of the two catchment areas	
payable to Government	2,848
Total Rs. ...	<u>1,09,257</u>

the number of toll roads, for the use of which the horse driver formerly paid so many cents per mile, and which have now been substituted by State-built highways that are open to the free use of any vehicle. But the owner of a motor-car—whether it be a pleasure car or truck—pays a State license fee of from five to fifty dollars a year, while the owner of a horse-propelled vehicle goes scot free.

Any fair-minded and clear-thinking man will agree that the burden for the construction and upkeep of roads should be distributed in the proper proportion among those who derive the benefits from those roads, and based largely on the amount of destruction wrought by those vehicles which use the roads the most. To assume, then, that the wear of our roads is caused solely by the motor-driven vehicle, is to dispute the absolute evidences furnished both by theory and practice. Superficially, we may say that road wear has increased ten times since the advent of the motor car—but roads have been used more than ten times as much as was the case when the horse furnished the only means of highway transportation. It is in reality the wonderful increase in the *volume* of highway traffic that has blinded the average man to the facts and has led him to attribute rapid road deterioration solely to mechanical transportation.

Effect of speed on the road surface.

But we must admit that the motor car, aside from its great preponderance in numbers, is a serious offender so far as road wear is concerned because of the speed at which it travels. This factor is well cared for, however, if we include in our basis for uniform taxation of road vehicles the average distance covered per unit of time by the various types of road users: in other words, speed is an important consideration, not only from the standpoint of the greater distance covered but also because rapid travel over a given number of miles has a greater disintegrating effect on the road surface than the same mileage covered at a slower rate.

We, therefore, have the experimentally and theoretically sustained statement that, if a wagon and a motor truck, weighing the same and with the same size of wheels and width of tires, are driven at the same speed over a certain stretch of road, the greater wear will probably be caused by the horse-drawn vehicle—not only because of the action of the horses' hoofs, but because of the steel tires of the wheels.

The only basis of the present form of taxation is the horse-power, determined by multiplying the square of the bore of the motor by the number of cylinders, and dividing this product by 2.5. This gives a fairly accurate comparison of the horse-power of motors of different sizes, and is sufficient for all practical purposes of taxation (but not of actual horse-power rating). But under certain conditions, a two-horse team and wagon (which would not pay one cent of tax to the State) can cause more destructiveness to costly roads than any five-ton motor truck. In fact, it is stated on eminent authority that one of the least harmful appearing vehicles, the single-horse light run-about, can be the cause of more road wear than a heavily loaded touring car—and all because the weight of the first mentioned vehicle is concentrated on narrow steel tires that will cut into anything but the hardest road surface. It is, therefore, evident that only when it is considered in conjunction with other features of vehicle design and operation can horse-power be used as a basis for taxation.

Injury done by Horses' hoofs.

On a dry-surfaced road, the destructive effect of traffic is first caused by the loosening of the particles of the surface. A horse's hoofs, which are first sunk into the surface, and are then braced against the indentures thus made in order to obtain a sufficient "anchorage" to haul the load at each step, are especially destructive, and if these are followed by steel-tired wheels bearing a heavy load, the damage wrought is two-fold. A motor-car, on the other hand, is propelled by its own rear wheels, but the action is more than a rolling

one, for traction must be secured at the point of contact with the road surface, and the entire power of the motor must be concentrated at these two points. Thus the gripping to secure traction is combined with the rolling action of the rear wheels, and the tendency is to loosen particles of the road surface and to 'kick' them out behind.

Aside from the greater reaction at the driving wheels caused by high speed, the ensuing suction and air currents whirl the dislodged particles in all directions, and eventually the road surface disappears entirely. This is an effect of high-speed travel that is often lost sight of by the average motorist, but is sufficiently important to deserve inclusion in the consideration of taxable factors.

Weight and Area of Tire Contact.

Except as high speeds, heavy loads, and high powers must, as a rule, go hand in hand, the actual power which the motor is capable of developing plays a minor part in road wear—and yet at present it is the sole basis of taxation of automobiles. The weight of a vehicle under running conditions is one of the most of the important factors when considered in connection with other features of design. A load, the major portion of which is concentrated on the two rear wheels of the truck, will naturally wear a road much more rapidly than would be the case were the same weight more equally distributed on each of the four wheels. In like manner a certain weight per wheel concentrated on a narrow tire will serve to cut and wear the road surface more rapidly than if a fifty per cent greater weight were carried on tires of double the width of the one in question. It therefore becomes a matter, not of weight alone, but rather of proportion of weight to area of tire contact. Weight in pounds per square inch of tire contact with the road is consequently the only manner in which load or weight need be considered. This can well be realised if we take the case of a steam roller; this is probably the heaviest type of road vehicle and yet its action on the road

surface is beneficial rather than harmful, for the wheels and rollers carrying the load are so broad and the weight is therefore distributed over so large an area, that the weight per square inch of road contact becomes scarcely greater than that of a bicycle and rider.

Steel vs. Rubber.

But the area of contact of the tire with the flat road surface is dependent upon more than the width of tire and the diameter of the wheel. It is in this consideration that the *kind* of a tire—whether steel, solid rubber, or pneumatic—plays an important part. If the material of which the tread of the tire is constructed is hard and unyielding, the area of contact will be scarcely more than a line equal in length to the width of the tire in question. Rubber is more yielding, and as it flattens appreciably at its point of contact with the road, the area of contact becomes a true surface of two dimensions. Furthermore, the softer texture of the rubber serves to deaden or cushion the severity of the blows which are always struck on a road surface and which are due to even the slightest inequalities. A pneumatic tire is more resilient than is one of solid rubber, the flattened surface is therefore greater, and the weight per square inch of contact for loads of a given size is consequently less.

As motor vehicle tires are always of rubber, and as their width is generally greater than is that of the steel tires of horse-drawn vehicles carrying equal loads, we find a double reason why, upon these considerations alone, horses and wagons damage road surfaces more seriously than do motor cars. As it would prove to be an impossible undertaking to attempt to measure the actual area of road contact of every vehicle, it is probable that a certain constant will be adopted for each class of tire so that this figure, when introduced into the formula taking into account the width of the tire, its diameter and the total load on the wheel, will give approximate results for determining the road destructiveness of any wheel at a given speed.

Banking Roads to Prevent Skidding.

There is one important factor affecting road wear that we have not as yet considered and one in which the motor car is by far the more serious offender. This is tire slipping and skidding—skidding being generally understood to mean a side slip while slipping wheels indicate a loss of traction in a forward direction. Skidding is primarily dependent upon speed, although nature of road surface, tire surface, and “suddenness” of the turn play an important part. Slipping is solely dependent upon the nature of road and tire surfaces and the amount of acceleration. Skidding plays its most destructive part on winding roads that are not properly banked while the results of slipping are seen most frequently at the beginning of hills, or at other portions of the road where natural or artificial obstacles make it necessary for the majority of cars to shift to a lower gear.

Whenever a moving body is turned aside from its natural direction, there is a tendency for the wheels to continue in that direction because of the physical law relating to mass and velocity, and the effort required to divert a moving body from a straight line. The greater the adhesion between the tire and the road, the greater is the tearing effort applied to the road surface. Therefore even though skidding does not actually take place, the effect of diverting the heavy and rapidly-moving mass from its original direction is evidenced at all sharp turns. Where the road surface is loose, its top will be thrown aside in wide paths, due to the side-sweep of the wheels and the greater width covered by the treads because they are following the path of an arc rather than that of a straight line. The effect of a properly banked curve is to assist the change in direction of the car, and therefore roads scientifically constructed will not show the undue wear on the turns that is the case with “flat” corners.

Slipping on application of the brake.

The slipping of a tire at high speeds of travel might not be perceptible, but experiments have shown that, even on a hard, dry surface, this amounts to some four or five per cent. at rates of

travel exceeding 40 miles per hour. But it is the slippage of the rear wheels due to the sudden application of increased power that is the most destructive type on road surfaces. This is primarily dependent on power and gear ratio. It has therefore been decided by those experts who are endeavouring to reach a satisfactory method of equable taxation for all road vehicles that the gear ratio of the direct drive, when properly introduced into the formula that must eventually be evolved, is one of the most necessary considerations. The others are those that have already been mentioned, namely, horse power, speed, weight per square inch of tire contact and the type of tires employed.

This is the motor car taxation situation as it stands to-day. The various prominent automobile bodies such as the Society of Automobile Engineers, the National Automobile Chamber of Commerce, and the American Automobile Association, are endeavouring, not only to secure fair legislation but also to arrive at some basis of equable taxation that can be adopted by the different States, so that there will be uniform laws prevailing throughout the country. Why would the owner of a motor-truck, for example, who delivers goods across the boundaries of two or three different States, be subject to the exactions of as many different ways obstructing the taxation of his vehicle? Work along these lines is still in its formative period, but with these prominent engineers and business men earnestly at work, our legislators must soon become interested and aroused to the unfairness of taxation laws that place a premium on antiquated hauling methods and that do not take into consideration the comparative cost of road upkeep entailed by the use of the different classes of road vehicles.

Drainage of Paracherries and the Exclusion of Silt and Storm-water from open drain connections.

FOR a long time to come, there will exist in Madras and most Indian Towns, paracherries and collections of huts where each dwelling cannot be provided with a separate connection to a sewer. In such cases where underground

Drainage of Paracherries, etc.

sewers exist, the most practical method of drainage is to provide a sufficient number of suitable flush-out latrines for the use of the inhabitants of the paracherries, and to furnish the houses with a good class of open drain for the removal of sullage water from kitchens, etc. These open drains should be protected by constructing low curbs on the road side a little higher than the road level. This prevents stones and sand being washed into them and obviates a great deal of the labour which would otherwise have to be expended in cleaning the drains after heavy rains.

Exclusion of silt and storm-water from open drain connections.

It is of vital importance that the connections of these open drains to sewers should be furnished with means to exclude silt and storm-water. Apparatus of different descriptions have been designed for Madras. They consist of silt-pits to catch heavy materials, each combined with a rain-water separator of one of the following four types:—

- (1) Ordinary Overflow Weirs.
- (2) Leaping Weirs.
- (3) Plate Weirs.
- (4) The Madras Storm-water Separator.

In the case of the ordinary *overflow weir*, the inlet to the sewer is constructed so that when the flow exceeds the maximum allowable, the excess water passes over a weir provided for the purpose, and flows away to the storm-water drain.

In the *leaping weir* method of separation, the liquid normally drops down an opening in the drain into a pipe leading to the sewer. In times of rain when the flow becomes excessive, the rush is sufficient to carry the liquid right across the opening into the rain-water channel.

The *plate weir* is an alternative to the ordinary weir. In this case, a plate is placed horizontally across the channel

at such a level that the dry-weather flow passes freely underneath it, but in times of rain the level of the liquid is raised until it reaches the plate, when a portion of it passes over the top of the plate and is diverted into the rain-water drain.

The plate weir has this advantage over an ordinary weir that, whereas in the latter the flow increases continually, even after the overflow comes into operation, in the former the quantity of liquid which flows to the sewer diminishes slightly as soon as overflow begins. The reason for this reduction in flow is, that when the liquid surface touches the plate, the friction between the water and the plate reduces the rate of flow. The action is analogous to that of an ordinary pipe which discharges more when nine-tenths full than when flowing just full.

In any particular case, the most suitable of these three types of storm-water separators, is used where necessary and possible. Where there is an underground system of storm-water sewers, no other method is required.

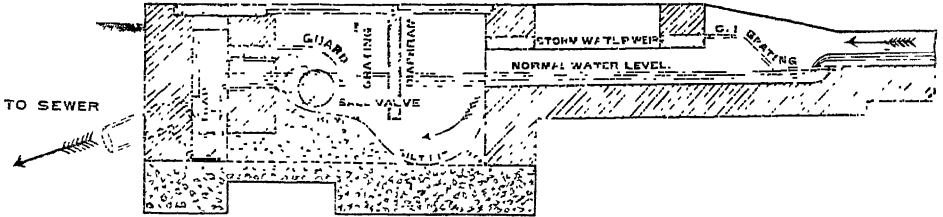
Owing to the absence of underground rain-water drains, however, there is flooding in hundreds of the streets of Madras during heavy rain-falls, such as would completely submerge any separator of the types described above.

Madras Storm-water
Separator.

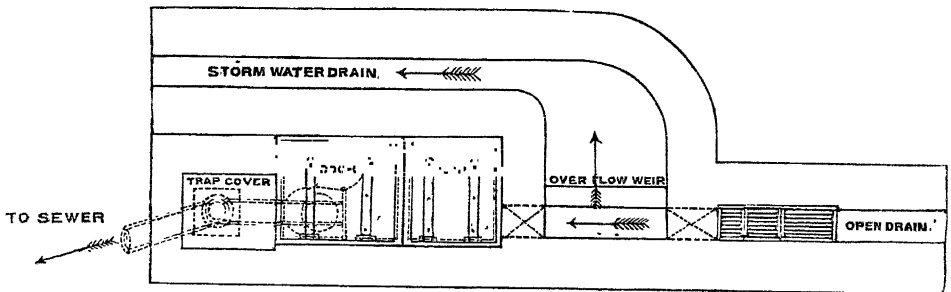
In fact, the ordinary weir and the leaping weir types would form openings down which immense quantities of silty water would rush into the sewers. The Madras type of separator has been designed to work when totally submerged.

It is the invention of Mr. J. W. Madeley, Special Engineer to the Corporation of Madras, and is patented. We understand that the "Separator" has been manufactured by Messrs. Doulton & Co. in stoneware according to Mr. Madeley's design and a number of them are now on the way from England.

SECTION



PLAN



THE MADRAS STORM-WATER SEPARATOR

Patented by Mr. J. W. Madeley,
Special Engineer to the Corporation of Madras.

The illustrations reproduced on the opposite page show the separator applied to the connection of a side drain to a sewer. The drain discharges into a silt-pit through which the sullage passes on its way to the separator chamber, which is provided with a suitable cover or grid. In the most convenient side of the separator chamber is formed the outlet connecting with the pipe which leads to the sewer. This pipe is provided with an intercepting trap and, if required, may be fitted with a ventilator and an inspection shaft. A grating is fixed at the inlet end of the silt-pit, and a second grating is provided to protect the regulator. An overflow weir is formed on one or both sides of the drain close to the point where it enters the silt-pit. In times of heavy rain when the outlet has been closed or partially closed as described below, the storm-water is discharged over this weir into an overflow channel.

The storm-water separator consists of a ball valve which may be made of wood, copper or other material, and is weighted so that it shall be submerged to the required depth. The ball is made of such a size and shape that when in register with the outlet, it wholly or partially closes the same, according to the amount of liquid that is to be allowed to enter the sewer. The floor and walls of the chamber between the silt-pit and the outlet are shaped to serve as a path or guide for the ball valve, as it is carried along by the liquid flowing through the chamber. The ball constitutes the means of controlling or regulating the flow through the outlet. The liquid in passing towards the outlet causes the ball to remain in engagement with the curved path formed in the floor of the separator chamber. Starting with the silt-pit emptied and the ball valve at the lowest point of its path, then as the surface of the liquid rises, the ball also rises and partly throttles the outlet, permitting only a definite quantity of liquid to pass through it. When the liquid reaches a predetermined level, the ball valve closes the outlet as completely as is allowed. By varying the contour or profile of the ball path, or by varying the size and shape of the ball valve or

orifice, or by altering the weight of the ball valve, the flow may be regulated as desired. To assist in retaining the ball valve in its path, should a sudden or heavy rush occur, and as a protection against wilful tampering, a guide or cage is provided. This cage is also employed to limit the rise of the ball in order that the outlet may not be completely closed by the valve. A number of these storm-water separators are now in operation in Madras. It is found that they give very satisfactory service provided the silt-pits and gratings are regularly and properly cleaned.

Every type of storm-water separator at the junction of a side drain with a sewer must be provided with some method of extracting rags, sticks, leaves, and other refuse, and also with the means of eliminating the silt. This is conveniently done by means of a suitable grating to exclude the coarse floating matter, and a silt-pit to allow of the deposition of heavy grit, stones and silt, which are continually carried into the side drains, especially when it rains. A suitable arrangement of grating and silt-pit is shown in the illustration. It consists of a curved grating of such a form that a considerable quantity of refuse may collect on it without interfering with the flow of sewage, and of the silt it carries in suspension. After passing through the grating, the sewage enters the silt-pit, so formed that it constitutes a receptacle for silt and the like below the flow level. A diaphragm or baffle plate, which in Madras takes the form of a Cuddapah slab, is built into the walls of the chamber, and causes the entering liquid to flow in a downward direction, and thus materially assists the settling of silt. The silt-pits are provided with heavy doors and yet are readily accessible for cleaning. Square corners are avoided and the bottoms are rounded in such a manner that the silt will fall readily towards the cleaning scoop. Small platforms with curbs and draining gaps are provided on to which to draw the sticks and large refuse collected by the grating.

Standard Latrines for Plank Houses in Lanmadaw.

[H. LAWRENCE PEARSON, M. INST. C.E., M.I. MECH. E.,
DEPUTY CHIEF ENGINEER, RANGOON MUNICIPALITY.]

THE difficulties that have arisen in connection with the sanitation of the Lanmadaw area are so typical of parts of many other Indian cities that a note thereon may be of general interest.

Lanmadaw area was sewered in 1890, as part of a comprehensive scheme for sewerage of the closely inhabited parts of Rangoon Town area. When in the usual course householders were ordered to connect to the new sewers, this difficulty arose: many of the houses were of such a poor type that the cost of erecting proper latrines and connecting with the sewers would be greater than the value of the existing buildings, and to have insisted upon connections would have meant financial bankruptcy for the owners. The buildings in many cases are old and only one story high and built of timber or wood and iron, and in some cases, wood and thatch. They can only be regarded as temporary as they cannot be rebuilt except in accordance with modern by-laws and also because the ground is becoming too valuable for such buildings to occupy.

For these reasons connection was not insisted upon and conservancy by cart was continued. The Municipality were thus placed in the position of having paid for the sewers which were very little used and of having at the same time to maintain the conservancy establishment. Of much more importance than this double expense, however, was the fact that the insanitary state of the neighbourhood continued, and the abnormally high death-rate forced upon the authorities the necessity of adopting special treatment to meet the special circumstances. The Municipal Committee, therefore, called upon the Chief Engineer in collaboration with the Health

Officer to put up proposals for the cheapest possible form of latrine and connections that could be considered satisfactory in the special circumstances. The standard latrine and bathing place with connection to the sewers shown in the sketch were the outcome of this effort.

In considering its merits and demerits it should be remembered that it can only be regarded as a temporary structure designed to last until the death from natural causes or by condemnation of the house to which it is attached, but secondly that it must be efficient and sanitary and likely to remain so for some years. In the endeavour to cut down the cost, therefore, the designer is limited and it was found that unless efficiency was to be sacrificed, very little could be done except to adopt the simplest possible fittings and very light construction. For example, corrugated iron is used for walling but as this would corrode in less than a year if exposed to constant splashing and damp from a urinal it is protected up to a height of 2'-6" by cement plaster on steel mesh reinforcement.

Since the accompanying sketch was made, it has been found desirable to put in a 100 gallon tank and a tap for the sink as well as for the bathing platform.

The bathing platform is provided with a cement concrete floor and curb and wood partition walls.

The total estimated cost is Rs. 350.



FIG. 1.

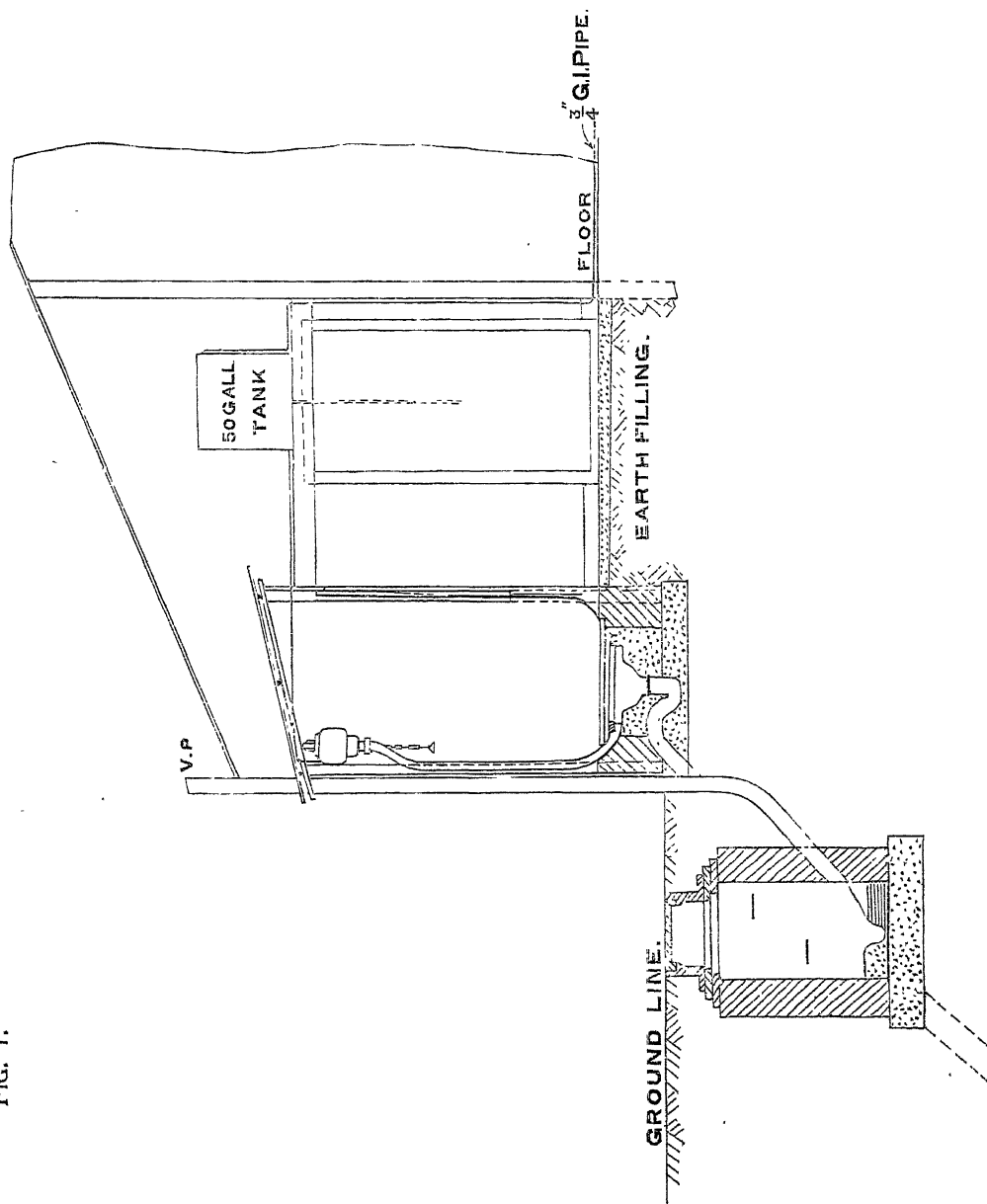
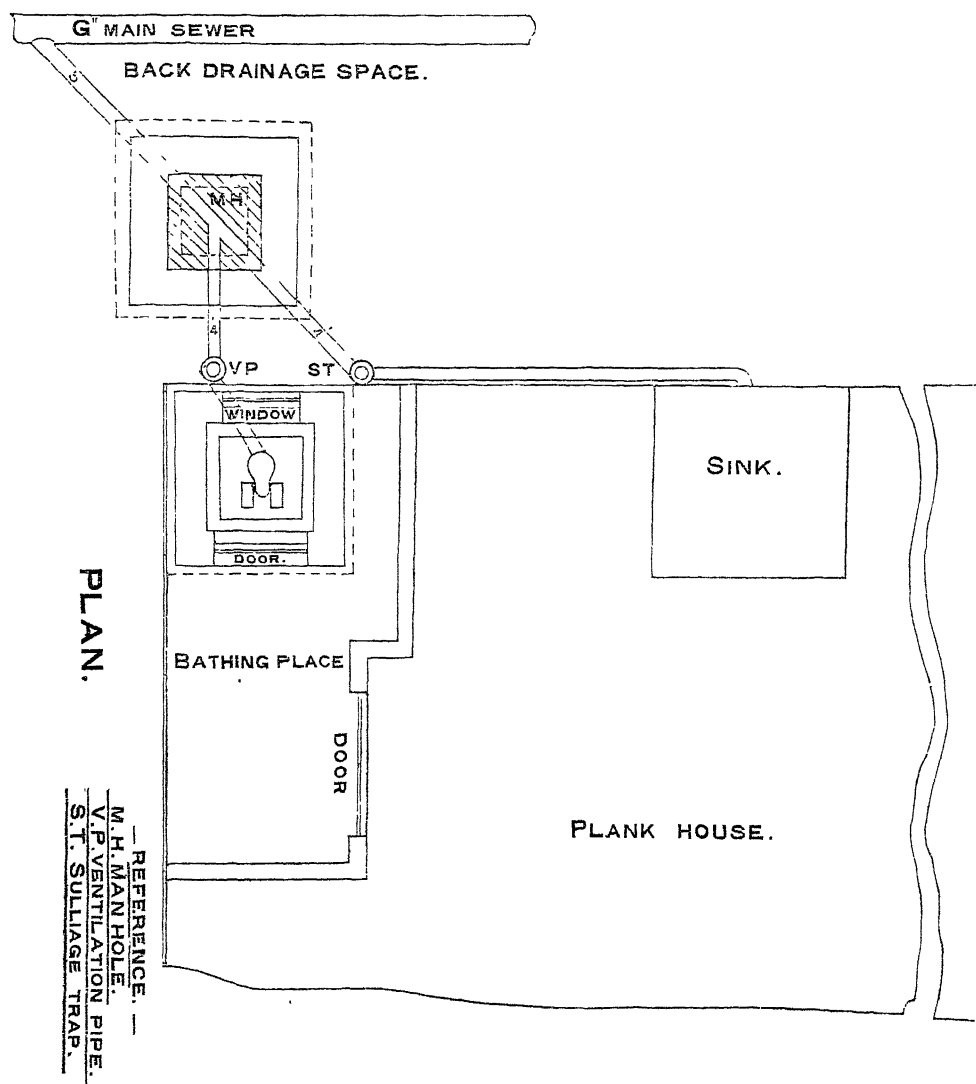


FIG. 2.



Standard Latrines for Plank houses in Lanmadaw Quarter (Rangoon Municipality).

FIG. 3.

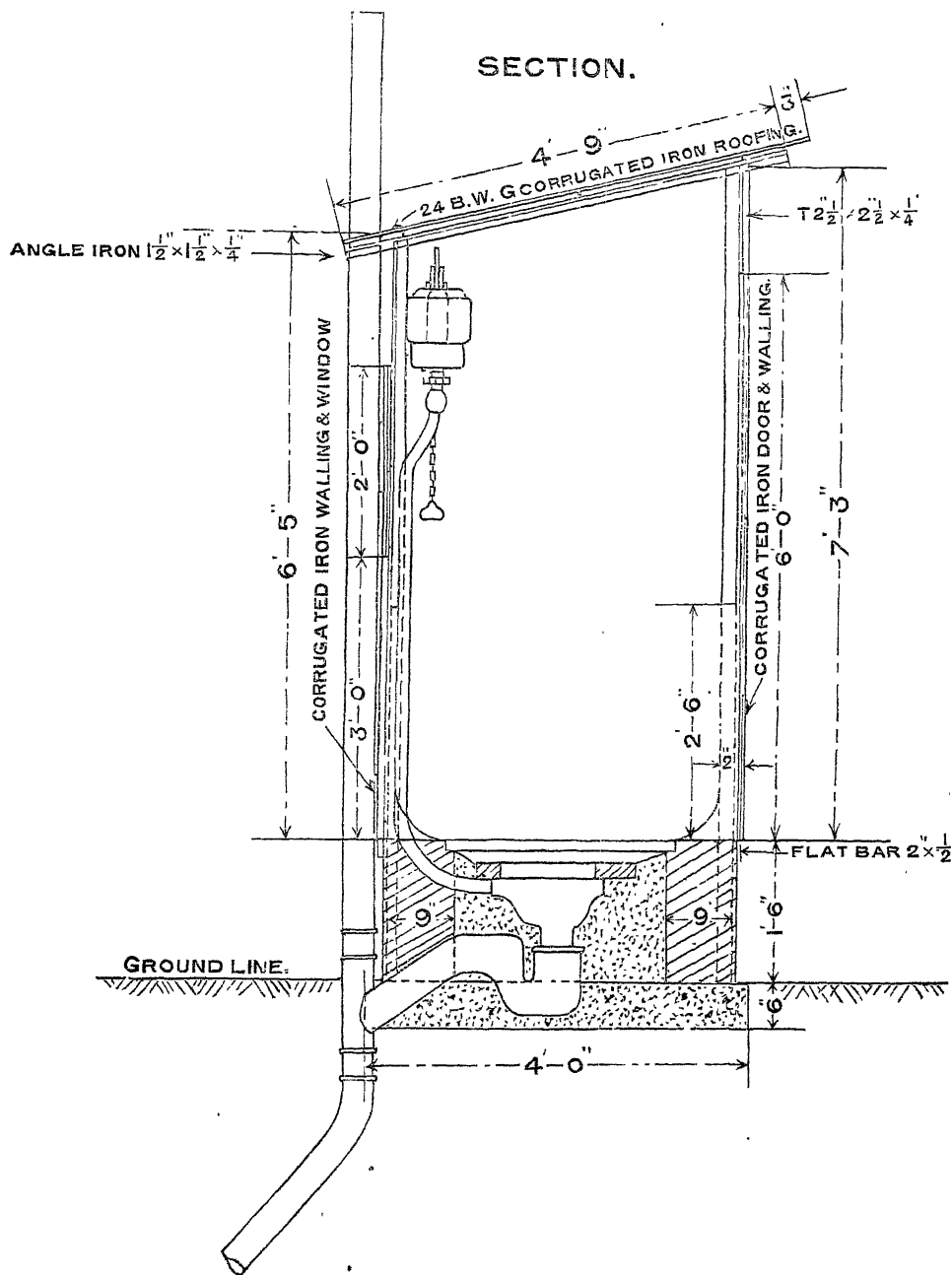
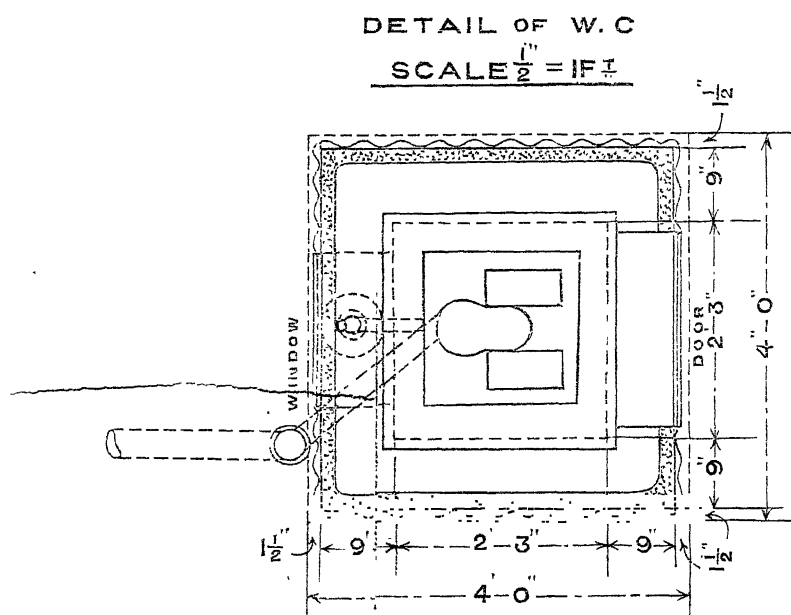


FIG. 4.



Standard Latrines for Plank houses in Lanmadaw Quarter
(Rangoon Municipality).

The Bombay Town Planning Exhibition (1915).

THE Committee appointed by Government for the purpose of organising the arrangements in connection with Professor Geddes's Town Planning Exhibition held in the Town Hall, Bombay, has been dissolved. Mr. B. W. Kissan was the Secretary to the Committee and Government have thanked him and the members of the Committee for their satisfactory organisation of the arrangements in connection with the Exhibition.

The following is an extract from the Report of the Exhibition Committee:—

The Exhibition was opened by His Excellency at 5-30 p.m. on March 16th in the presence of a large gathering. The following is Professor Geddes's note of the speech made by him on this occasion:—

“Town Planning Exhibitions, their origin and recent history. Their aims and uses : (1) scientific and (2) practical.

(1) the study and comparison of cities; their survey and interpretation—as all in many ways similar, yet each in its own way distinctly developed, even unique.

(2) the improvement of cities, and this in all possible ways—place, work, and people together.

We see how place largely influences conditions, occupations and industries, and these in their turn the type and institutions of the community.

Yet also we constantly see the community re-determining its environment, and this not only for economic purposes, but also in terms of polity and religion, of culture and of art.

Renewal of the conception of the City, as a worthy field of interest and effort, with corresponding redemption of the merely self-centred ‘individual’ of political economy into the active and useful citizen.

Town planning is thus not merely a task of industrialists and economists in one generation or of sanitarians and engineers trying to undo the mischief these have unthinkingly created. The problem

of civics, the test of citizenship, are co-extensive with the whole field of civilization—and Town-Planning Exhibitions are thus a fresh form of endeavour towards mobilising the resources of peaceful civilization and of organizing the strategy of its peaceful maintenance.

In further lectures these themes will be developed, and in some measure applied to Bombay and other cities of India."

His Excellency in declaring the Exhibition open commented on the beautiful pictures which were displayed and dwelt on the necessity of town planning in all parts of the Presidency. He emphasized the importance of following the right lines in town planning, so that mistakes might be avoided as far as it is possible. He held it to be the duty of Government to see that people of all classes and creeds should have an opportunity of living in comfortable homes and in happy surroundings, and to achieve that purpose by administration and legislation. His Excellency hoped that the result of the discussion which would take place during the Exhibition would be useful and instructive.

His Excellency was conducted round the Exhibition by Professor Geddes and stayed until a late hour. On the following day Her Excellency Lady Willingdon honoured the Exhibition with a visit, and subsequently His Highness the Gaikwar came. The Exhibition was visited also by various delegates of *mofussil* municipalities, such as Karachi, Sholapur, Hubli, Jubbulpore, Matheran, Poona, Dharwar, etc.

The central portion of the Exhibition was devoted to Indian cities. Another section was given up to historical town-planning, and others to garden cities and suburbs and modern town plans. A separate room was used for a fine collection of London plans. The thanks of the Committee are due to Mr. Orr and the officers of the Improvement Trust, and to the officers of the Municipality, for the loan of exhibits relating to Bombay.

The Exhibition remained open until April 3rd and was well attended. An interested group was conducted by Professor Geddes round the Exhibition every morning and afternoon. The Honourable Mr. Orr and other officers of the Improvement Trust were in constant attendance to explain the numerous Trust models which had been lent to the Exhibition, and Mr. Orr's explanations of the Trust schemes were especially appreciated by those visiting the Exhibition.

A course of daily lectures was delivered at 6-30 p. m. by Professor Geddes as follows:—

- I.—Wednesday, March 17th.—Town Planning in Europe :
A representative City through the Ages.
- II.—Thursday, March 18th.—Town Planning in Industrial
Europe, Old and New.
- III.—Friday, March 19th.—Garden Cities and Garden
Villages : Representative Types.
- IV.—Monday, March 22nd.—The Garden City Movement
and its Economics.
- V.—Tuesday, March 23rd.—Town Planning in Indian
Cities, Historic and Recent.
- VI.—Wednesday, March 24th.—Indian Cities continued :
Congested and Insanitary quarters.
- VII.—Thursday, March 25th.—Indian Cities continued :
Suburban expansions.
- VIII.—Friday, March 26th.—Problems of Citizenship.
- IX.—Monday, March 29th.—Problems of Bombay (1).
- X.—Tuesday, March 30th.—Problems of Bombay (2).

The lectures were by the kind permission of the Royal Asiatic Society held in the Society's Committee room. The attendance varied from about 150 to 200 and included Government officials and members and officers of the Corporation and the Improvement Trust. The lectures were of a stimulating character and cannot have failed to cause an increase of active interest in the numerous problems of modern urban development. It was proposed to hold a meeting of this Committee during the week after the Exhibition in order to obtain suggestions on certain practical points from Professor Geddes but it was found impossible to arrange such a meeting as Professor Geddes had to visit Gujarat.

It may be mentioned as one practical outcome of the Exhibition that Professor Geddes conducted every day from 10 to 3 at the Exhibition a class (announced in a Government Circular of February 26th) intended for the practical instruction of surveyors and other municipal employes concerned with town planning and town improvement schemes. This class was held on 16 days, and the average attendance was 13 in spite of the very short notice of the class which had been given. It included delegates from Bombay, Dharwar, Nasik, Poona, Karachi, Jubbulpore, Hubli, Matheran, Gadag, Ratnagiri, Nipani, Jamnagar, Jejuri, Vijapur, Travancore,

Thana, Rahimatpur, Islampur, and some surveyors employed on the general development of Salsette—30 in all. Professor Geddes criticized in detail plans and proposals which were made by the members of the class and himself drew up sketch plans which can be considered with a view to carrying them out in practice.

It will be convenient to record here the fact that Professor Geddes delivered a course of lectures before the University of Bombay as follows:—

- I.—Wednesday, March 31st.—Cities in History.
- II.—Thursday, April 1st.—Cities in Contemporary evolution.
- III.—Friday, April 2nd.—Cities as ideals to be realized.
- IV.—Saturday, April 3rd.—Universities and Cities.

Indian Conditions and “Standard Latrines.”

[BY K. V. SUBBA RAO, B.A., B.L., MUNICIPAL
COUNCILLOR, SALEM.]

THE problem of the town is how to keep the streets and houses clean from urine and nightsoil. Where 75 per cent. of the town-population is too poor to have houses with latrines for private scavenging, any amount of Government orders directing Municipal Councils to popularize the private scavenging system by resorting to the compulsory provisions of the District Municipalities Act will be absolutely of no avail. Poverty and the consequent inability to provide for the bare necessities of even domestic life bar all ideas of progress, and the problem is of such a magnitude that unless a solution is found for it, no Indian town will be habitable in the near future.

The only alternative to compulsory private scavenging arrangement is the provision of public latrines for the benefit of the poor. Any improvement in the sanitation of the mufasil town is therefore bound up with the proper keeping or otherwise of these public latrines. Professor Geddes, with his characteristic candour called the so-called type design

buildings "tinned abominations." Fancy a platform two feet high built in brick and mortar and covered over with Cuddappah slabs, a corrugated iron roofing with sides covered by material of the same nature except where space is left to give access into the structure—that is the outward appearance of a "standard" latrine. Inside, it consists of compartments screened off by the inevitable corrugated iron sheets; each compartment having a seat over a bucket which is to be the receptacle for the excreta—solid and liquid.

If you wish to inspect any of these monotonously designed buildings, do it immediately after they are built, i.e., before they are used for the purpose for which they are designed; for, afterwards, you may not be able to approach them even! Without conceiving a spirit of criticism, one can safely assert that the public latrines should be such as to suit the conditions of living of people who resort to them. These tin structures are not those that give anything like comfort to the users and it is only the District Municipal authorities that know that they are a mere "abomination."

The Indian sun makes the whole structure and—what is worse—the flooring and the seat, so hot even in the early hours of the morning that very few care to get into a public latrine after 9 A.M. What do the people do then to ease themselves during the hot hours of the day? Why, they have their lanes—blind lanes! This accounts for the extremely filthy conditions of the small by-lanes. The police constable with his affection for his nose avoids these places—and all efforts of the conservancy staff to put the by-lanes in some sort of condition at least for a few hours in the morning end in failure.

The standard latrines require cleaning with water immediately after they have once been used by a batch of persons. Water, plentiful supply of water, is therefore of prime necessity in the matter of cleaning these latrines. Even Municipalities that can boast of a good water-supply have not got enough of water to introduce the flushing system, without

which the standard latrines are useless. Most of our Municipal Towns have not got sufficient water even for drinking purposes. Cuddappah slabs without water to clean them are the worst material for flooring. The ravages of the hot sun render the Cuddappah slabs untidy enough after a single use, with the result that the people desert the latrines and use the surrounding locality much to the annoyance of the passer-by.

If water is to be carried from a distance, the Councils should have more establishment for cleaning purposes and most of the Councils cannot bear any more expenditure under that head, unless the Government who gave the grant for the latrines give an extra recurring grant for keeping them clean.

Your readers should have an idea as to the latrines which the standard latrines have replaced. They were something like our village cattle-pounds—four walls with an entrance on one side. The flooring was simply mother earth and the conservancy staff cleaned them at intervals. Experts thought that earth should not be contaminated and stone flooring came in. Even if contamination of earth in places far off from drinking wells be objectionable, the stone floor is no improvement. The contamination is taken away from the earth and simply transmitted to the atmosphere which is a more active agent in spreading it round. Improvements should be effected by studying the defects of the system and remedying the defects and not by prescribing new “types”, possibly suited to other conditions.

My suggestion would be that public latrines should not be permanently located in one place. The latrines should not be too near nor too far from dwelling-houses. About half an acre of vacant space should be set apart in or about every public latrine to give facilities for the periodical shifting of the latrines from one place to another. Portable wooden or corrugated iron sheets should be fixed to enclose some space and in the interior chatties should be kept, rather than buckets, in holes dug in earth. The chatties should be cleansed for some

time and then simply thrown away to give place to new ones. Even with frequent renewals chatties will be cheaper than buckets.

My suggestion may not be a perfect one but I only plead for an investigation into the matter by the Government as it is feared that large sums are now being wasted on standard latrines. The standardization of designs by experts takes away local initiative for improvement and in giving grant to local bodies, Government would do well to give them a freer hand in the matter. As the Madras Sanitary Board recently observed in another connection, a prominent result of the issue of type designs has been that the design, though intended only as a type for general guidance, is followed in every detail, without sufficient consideration of surrounding circumstances in cases to which it is not suited.

Anti-Malarial Operations in Madras City.*

[By K. RAGHAVENDRA RAO, B.A., M.B., AND C.M., SPECIAL
MALARIA OFFICER, MADRAS CORPORATION.]

IT was during the last quarter of 1912 and the early part of 1913 that an alarmingly great number of cases of fever were reported from the first three divisions consisting of Tondiyarpuram and Royapuram and that a large number of residents therein migrated to other parts of Madras and to the mufassal. A hue and cry was then raised that the Corporation and the Government were not doing anything for the poor people, that the unhealthiness consequent on the contamination of the wells and ponds, etc., by the sewage farm was solely responsible for the fevers of the locality. The popular mind seems to have been much exercised in discovering the cause of this admittedly unsatisfactory state of affairs; no single factor—not even the alleged indifference of the Corporation, nor the fancied apathy of the Government—was believed to have brought so much mischief in the direction of rendering the

* Being the official report on the progress made in the anti-malarial operations in Madras city from January, 1913, to end of January, 1915.

locality unhealthy and uninhabitable as the existence of the sewage farm in the close vicinity of the afflicted districts ; it was the sewage farm that not only bred and spread the dreaded disease but also passed on the contamination to all the wells and ponds in the locality ; the colossal potency for mischief which the contamination was credited with would have been appalling to a degree, if not unimaginable, were it not amusingly fanciful. It was commonly given out that any one who would drink water from these wells or ponds was certain to catch fever the next day and, incredible as it may seem, it was seriously advanced that even the drinking of water from a tender cocoanut grown in Tondiyarpet was enough to bring on the dreaded disease.

2. Meanwhile the Health Department of the Corporation having ascertained on investigation that malarial fever had broken out in an epidemic form in the first three divisions—the incidence being specially noticeable among the dhobies of the locality—initiated a small scheme of anti-malarial operations in January 1913 under the supervision of Dr. G. Raman Pillai, now the Assistant Health Officer of the Corporation. I think the work that they started was based solely upon what was being done then in the neighbouring notoriously malarial tracts of Tiruvottiyur and Kattivakam a little to the north.

3. The matter was thereupon considered too serious to be combated by any small measures and the laying out of a comprehensive scheme of anti-malarial operations in the city was decided upon. The Government having been approached for a grant and having recognized the good results of the anti-malarial operations in the Ennore area, were pleased to give a grant of 1 lakh in 1913, which was subsequently increased by 3 lakhs for 1914—15, and appointed Captain E. C. Hodgson, I.M.S., Special Malaria Officer, on a pay of Rs. 1,200 per mensem to work out the whole scheme. This officer joined his appointment on 19th November, 1913 and started the work with the establishment detailed in G.O. 539 M., dated

14th March, 1914. Captain Hodgson having been called for active service was relieved by Captain Russell on 10th October, 1914, who was again relieved by me on 1st January, 1915.

4. Captain Hodgson, I.M.S., started a rapid malarial survey of the different parts of Madras and came to the conclusion that the following parts of Madras were severely affected:—

Divisions 1, 2 and 3	... Tondiyarpet and Royapuram.
Division 11	... Purasawalkam.
„ 19	... Royapettah and portion of Mylapore.

The preventive operations were practically to be confined to these areas and consisted chiefly of—

- (1) free distribution of quinine both as a prophylactic and preventive;
- (2) reclamation of ponds, pits, low-lying lands and wells in which were found breeding the larvæ of the common malaria carrying *Anophelene* mosquitoes here, viz., *Nm. Ludlowi*, *Ne. Stephensi*, *M. Culicifacies*;
- (3) use of larvicidal agents, such as petroleum;
- (4) cleaning tanks and ponds of weeds, moss, etc.;
- (5) introduction of larvicidal fish into wells and tanks.

A rapid survey to find out the enlargement of the spleen in children under 12 years was also undertaken with the result that from 2 per cent., in Georgetown to 35 per cent., in Tondiyarpet were found to have enlarged spleens, although in some places in Tondiyarpet the figure rose up to 86 per cent.

5. *Quinine distribution.*—Four nurses on Rs. 200 each per mensem were first appointed to visit the houses of the afflicted in the affected districts and to administer quinine free of charge. This number was increased to six in November 1913 and then nine in May 1914, at which figure it stands now. Three malarial dispensaries were also opened simultaneously, one each in Royapuram, Dhobypet and Purasawakam, under the charge of a Sub-Assistant Surgeon on Rs. 50+15 per mensem. All these officials have been required to maintain

a record of malarial cases coming under their observations. In view of the better conditions prevailing now, it is proposed to reduce the staff of nurses from nine to six on a pay of Rs. 100 each.

6. *Reclamation.*—Work could not be carried on quickly in this direction for various reasons, although several notices were issued to owners of ponds, tanks, etc. Further, though some of these have been prosecuted and even fined, still the work required of them was not done. The pleas put forth are many and varied. In some cases the ponds, till then neglected, were essential for purposes of irrigating gardens, but they would be kept clean and taken care of; in others, there was the difficulty and the prohibitive cost of getting earth to fill up the ponds; in yet others, the value of the land was very little and the cost of filling would come up to good many times its real value. It would not be out of place if I should speak here from my experience in Ennore area that the work of reclamation was done there with much less difficulty and the people there, poor and rich alike, realised after some time that it was their duty to co-operate with us; and in many cases where water was required for purposes of gardening, etc., option was given to sink in good round cement wells in the place of the objectionable ponds and to fit them with piccotahs.

7. The following table shows the amount of work done under reclamation in Tondiyarpet, Purasawakum and Mylapore :—

			Pits and cisterns.	Tanks and ponds.	Wells.	Amount spent.	Amount reco ver- able.
						Rs.	Rs.
Existing	..	..	557	489	5,045	47,300	..
Closed	..	..	6	53	40	..	9,500

N. B. —(1) Column 5 includes cost of establishment of out-door Assistant and Malaria Supervisors.

(2) It is not meant that all the existing ponds, etc., are to be filled up.

The great difficulty and the heavy cost of securing and transferring earth from a distance often of a mile or even more are to be specially noted in judging the cost of reclamation. Further, in a city like Madras a heavy shower of rain allows water to stagnate in small pools which may not dry up before two or three weeks at the earliest, the general road level being in many cases higher than the surrounding one in fields and gardens. Again, in a number of cases, it is not enough to fill up to the general water level only. If I remember right, the scheduled rate under Local Fund rules which we were given in Ennore area was Rs. 2-2-0 for 1,000 c. ft. of earthwork done, but here it is Re. 1 on an average for 100 c. ft. or Rs. 10 for 1,000 c. ft. of earthwork done by the lorry. It is felt that the progress of work is very slow even with the four lorries, each of which can load 100 c. ft. of sand, and one can only wonder what it would have been under the bullock and cart system.

8. *Use of larvicidal agents, such as petroleum.*—This was started just before Captain Hodgson took charge and is being continued with greater vigour. The substance used is crude petroleum or liquid fuel and the operation consists in soaking a thick swab at the end of a long stick with petroleum and mixing it well with the water of the pond along the edges and for about 3 or 4 feet beyond. This is repeated in every tank and pond once a week and, while effectually destroying larvæ, does not kill the larvicidal fish that may naturally exist in the ponds. This measure is of a temporary nature and is undertaken to minimise as far as possible the breeding of anopheles larvæ. Under the head of cleaning and oiling, Rs. 30,000 have been spent, which includes the salary of the out-door assistant and a set of coolies and maistries and cost of petroleum. When properly done, these measures are undoubtedly efficacious in keeping the breeding of larvæ in check, but petrolising large sheets of water may not prove so efficacious as all the oil is likely to be collected on one side or other, depending on the direction of the prevailing wind, and

leaving the major portion of the pond free from any oil, thereby allowing the larvæ to breed freely in such areas.

9. *Cleaning of ponds.*—Although promises were made readily enough, yet the work of cleaning tanks of weeds, etc., was in fact never done by the owners, so that the Corporation has been doing this work at the expense of the malaria grant. Captain Hodgson has reported that it will be enough to clean tanks once in three months after giving them two thorough and proper cleanings. He has further suggested the desirability of assessing a small annual tax on the owners of such tanks and ponds and maintain a small establishment of tank cleaning gangs under the Corporation permanently. There is one difficulty to be noted even here and that is, as the water of a pond evaporates and the surface of water becomes smaller, the underlying moss and weeds collect along the edges so that in some cases in probably a fortnight's time after one cleaning, the pond or tank may show an appearance as if it were not touched.

10. Another larvicidal measure of recent repute is the introduction of ducks into ponds and tanks; a measure of this sort calculated to be at once popular and practicable certainly deserves a very fair trial at least in such tanks and ponds as are or can be placed under the control of the Corporation or other responsible bodies such as temple trustees, mutt managers, etc. I mean writing to some rich and influential gentlemen of Madras requesting them to let in a few ducks into their ponds, myself keeping a watch over the results of the experiment.

11. Yet another method suggested for keeping the tanks and ponds innocuous is the frequent renewal of their surface by drawing off the water for use in gardens, laid out around them, rather than expenditure in filling up the existing ponds and tanks. It is said to be sounder policy to conserve the said tanks and create parks and walks around them.

12. *Wells*.—As regards wells, the measures that were first tried were mainly two. The first was to fit the mouth of the well with a door of mosquito-proof iron-wire gauze, in a frame usually of wood and movable on hinges. In practice, this was found very unsatisfactory, the door ceasing to be mosquito-proof for various reasons such as rusting and corrosion of the gauze, separation of the gauze from its wooden frame, which itself more often gets damaged, and so on. The second method was the complete filling up of the well with sand or debris or the complete closure of the mouth with Cuddapah slab and cement. While there is no question of the efficiency of this measure, there are certain serious practical difficulties in its way. It is not merely not popular, but is emphatically unpopular, when one considers that the memory of the recent water famine is still fresh in the popular mind and that there is a growing appreciation of the idea of letting in larvicidal fish to keep the wells innocuous. The introduction of these larvicidal fish into wells, etc., was started in September, 1913 as an experimental measure and an amount of Rs. 4,000 has been spent and the operation is being continued, the men working now at Georgetown. I am making an investigation into the efficacy of this measure and so far I can say it is an encouraging one. Whereas almost every well examined before the introduction of fish for mosquito larvæ was credited with a positive result, only 72 of 788 wells examined subsequently or 9·25 per cent were found to contain anopheles larvæ. The following table makes the point clear :—

Total number of wells examined.	Number in which fish were dead.	Number of wells in which anophelene larvæ were present.	Remarks.
788	108	72 or 9·25 per cent.	The larvæ have been found in wells where fish were alive.

Fish have till now been introduced in nearly 8,000 wells.

Here again we are confronted with one difficulty and that is in some cases, especially where the wells are filthy and disused, the fish introduced die out soon, and it requires careful watching of every well from time to time to see that the fish introduced continue to live. To this end, it is proposed to retain an establishment of one maistry and ten fishermen whose sole duty it is to continue the operation over the whole town and at the same time, reintroduce the fish where they are once put in and where they may die. There are 50 filthy and disused wells in 1st, 2nd, 3rd, 11th, 12th and 19th divisions recently surveyed and it is desirable that these be filled up with earth at a very early date.

13. To summarise. The measures recommended to be continued are as follows:—

- (a) Measures of permanent utility or radical measures—
(1) Reclamation, (2) Draining.

These are recommended for such tanks and ponds that could not be kept clean and free from anophelene larvæ by means such as those already mentioned, and such as are easy to fill up. At present in the same divisions noted in paragraph 12 where a recent survey has been made, there are nearly 126 ponds and tanks which are not used for any useful purposes other than those for defiling or are absolutely neglected and which being small and situated in populous localities must, I think, be filled up. As regards large sheets of water which cannot be filled up on account of the prohibitive cost and which are easy of being drained, measures for draining these into the nearest water course should be undertaken. At present as per G.O. 2561 M., dated 22nd December 1914, the drainage of the water of logged areas in Purasawakum will be undertaken by the Special Engineer of the Corporation.

- (3) Education of the popular mind by means of pamphlets and lantern slide demonstrations in the vernaculars.

(b) Palliative measures or measures of temporary utility or those that require intermittent or constant care—

- (1) Introduction of larvicidal chemicals.
- (2) Introduction of larvicidal fish.
- (3) Introduction of ducks.
- (4) Quininisation.

14. An investigation into the following is well worth being taken on hand—

(1) A study of mosquitoes in general and of anophelines in particular with special reference to their distribution and to the conditions favourable or unfavourable to their growth.

(2) A study of the flora and fauna of the tanks and ponds with special reference to the local distribution of the friends and foes of the mosquito clan in general and of the anophelene in particular.

15. Finally, a word or two about the grass farm may not be out of place here. On the recommendation of the special committee that recently sat to investigate and report on the Tondiyarpur sewage farm, the numerous swamps and ponds therein are now being filled up by the Corporation. The money spent till now under this heading is nearly half a lakh and it is credited to the slender revenues of the Special Malaria department. It is respectfully submitted that, the finding of the sewage farm committee being that only non-malaria carrying mosquitoes were found in the aforesaid swamps and pools, the cost of filling up such spots is properly a charge incidental to the maintenance of the sewage farm and as such to be borne by the Engineering Department or the Health Department and that in any case it is not a charge to be credited to the amount of the Special Malaria department.

Professor Geddes who had the kindness to give me an interview recommends shading up of the open channels by means of laying out of cocoanut avenues or papaya trees on either side of the channel to minimise the stink nuisance.

He also advises the planting at other places in the farm itself of these trees to drain the swamps and pools therein and to make the farm look beautiful. It is suggested that this recommendation may be given a fair trial.

Municipalities in Bombay.

THE demand for widening the franchise of municipal bodies in the Presidency of Bombay and for relaxing the control by officials has received very influential support quite recently. At the last Budget meeting of the Legislative Council held at Poona, the Government announced that certain reforms in municipal administration were under contemplation and promised to remedy the present system under which, out of 153 chairmen of councils, only 53 were elected non-officials. In the resolution of that Government reviewing the reports on municipal taxation and expenditure for the year 1913-1914, we have fresh evidence of the anxiety of Government to initiate further reforms. The Commissioners of the three divisions and of Sind report favourably of the growth of the sense of civic duty. One of them records the very gratifying fact that the withdrawal of direct official guidance, the appointment of non-official presidents and the extension of the electoral rights of rate-payers have in no case been discredited. Another officer speaks of the creation of a new standard of civic life. The Governor-in-Council has expressed his gratification at this result of 'the larger measure of autonomy and popular representation' granted six years ago, and promised to consider the question of the removal of certain conditions tending to restrict the wider application of this policy. We trust that this promise will be amply and liberally fulfilled and that, in dealing with alleged mismanagement of municipalities, a spirit of detachment and of judicious impartiality will be brought to bear. We are led to make this remark on account of that Government's attitude towards erring Councils in the past and of the fate which awaits the

Hyderabad Municipality. Municipal mismanagement and abuses must of course be prevented; for instance, the spectacle of a council which is not able to form a quorum on as many as thirty occasions in twelve months is an eye sore. Again, the dilatoriness shown by certain councils in the matter of remedying the irregularities and defects pointed out by account officers is reprehensible. Inefficiency caused by want of supervision is also to be put down. But in all human institutions, these lapses will be met with, and tact, gentle persuasion, and sympathetic supervision are the instruments which will bring about reform and not provocative threat and blandishments of power.

A noteworthy feature in the year 1913-14 is stated to be the striking increase in income, the net income, apart from receipts under 'Extraordinary and Debt', having gone up to Rs. 100 lakhs as against Rs. 88 lakhs in the previous year. The revenue from octroi is responsible for an additional Rs. 1·86 lakhs, shared by councils all over the Presidency, it being a result of increased trade. Proposals are under consideration for the replacement of this source of taxation by other methods, because of the undesirability of putting a burden on trade, though, like the excise revenue, the income from octroi is handy and lends itself to manipulation. But it is a troublesome tax to manage, and the system of refunds has given rise to a special evil. It would appear that firms frequently retained octroi payment receipts. A practice had also been allowed to grow up whereby refunds were paid in the case of grain exports, not on the strength of octroi receipts, but on the shipmaster's receipts showing the amount of grain shipped. Octroi receipts were thus left in circulation and were available for use as vouchers in support of refund claims for which the Municipality was not liable, the receipts thus acquiring a market value. A Karachi firm was prosecuted and punished and defalcations in respect of octroi revenue are also stated to have been found out in Hyderabad. Another matter causing apprehension is the high proportion which refund bears

to octroi, which naturally gives rise to a suspicion that abuses are prevalent. The system of terminal taxation has now been introduced, as an experimental measure in a few places, and experience alone can show how far it may be possible to replace octroi. The taxes on houses and lands exhibited only a slight increase, and the Government very properly call the attention of councils to the existence of a system of house-tax assessment under which the percentage on the rental value diminishes as the latter increases, a system which obviously works to the disadvantage of the poorer people and to the advantage of the richer. There was also the substantial increase of over Rs. 12 lakhs to municipalities for water supply and drainage, for the opening up of congested areas and for educational purposes. But it is unsatisfactory that there should have been a decrease in ordinary expenditure to the extent of Rs. 6 lakhs, which means necessarily that certain important projects were not zealously pushed-on or that certain councils were not zealous in conceiving sanitary projects. We are of course told that the expenditure of the previous year was phenomenal. But that is no reason why any lack of interest should be evinced in a matter, where the requirements are many and insistent. Schemes for better sanitation are required in most places, and we cannot but condemn the indifferent attitude of certain councils which do not avail themselves of the opportunity afforded by promises of grants for matured schemes. In the year under report, the expenditure on education was less than that for the year 1912-1913 and the fact appears to be that a small number of school buildings were built. But, here also, we cannot commend the attitude of councils, many of which are still faced, and will continue for many years to be faced, with the problem of airy school buildings. We are told again that the budget grant for sanitary and town extension schemes was Rs. 21 lakhs, out of which, however, only less than six lakhs were disbursed, owing principally to the shortage of projects sufficiently matured for the allocation of funds to

them. In view, however, of the known lack of facilities for these councils for getting expert advice in the preparation of plans and estimates and of the undesirability, in the interests of sanitation, of mulcting them of substantial grants for projects of public utility, the only fair and equitable procedure for the authorities to adopt is not to allow such grants to lapse, but to keep them in reserve to be drawn up for allocation as and when schemes may be ready.

Re-surfacing Roadways with Tar-Macadam.*

[BY N. GREENSHIELDS, A.M. INST. C.E., BOROUGH
ENGINEER AND SURVEYOR OF BEDFORD.]

IN 1907 and 1908 several experimental lengths of tar-macadam were laid down on the carriage-way in Hurst Grove, Alexandra Road, and portions of Goldington Road, Bedford, the material consisting of tarred granite, tarred slag and also clean granite and slag grouted in with tar and several patent preparations.

As a result of these experiments the author came to the conclusion that it was an unnecessary expense to use granite tar-macadam in Bedford, and considerable difficulty was also experienced in getting the granite macadam to bind down quickly for the reception of traffic. The grouting in with tar, etc., also did not give satisfactory results.

The material found from experience to be the most suitable was ironstone slag tar-macadam, and he, therefore, recommended the town council to adopt this, and it has given excellent results in Bedford, both from the standpoint of economy and its suitability to withstand the wear and tear of traffic.

* From a paper prepared for the Annual Conference of the Institution of Municipal and Country Engineers.

Experiments were also carried out with ordinary tar and several patent preparations of tar for mixing with the iron-stone slag, and ordinary gas works tar was found to give satisfactory results, provided it was carefully boiled and a small quantity of pitch added when required.

Most of the slag tar-macadam used in Bedford is mixed by hand in the corporation depot at Newnham, and from practical experience the hand mixed material has been found to be far stronger and infinitely better suited for use than machine used material bought ready for use. Any tar-macadam required beyond and above the quantities mixed at the depot is purchased from outside contractors.

All clean ironstone slag is sheeted on the railway waggons and on the carts to keep it as dry as possible and the material is afterwards dried and warmed upon hot plates before being mixed. The whole of the hand-mixed material is turned over three times in the mixing, the quantity of tar used varying from about $8\frac{1}{2}$ to 21 gallons per ton of material mixed, the variation being due to the size, etc., of the material treated. All tar is carefully boiled before use.

The hand mixed slag tar-macadam comes out at from $6\frac{1}{2}$ d. to 1s. $7\frac{1}{2}$ d. per ton cheaper than it can be bought ready mixed.

The cost of mixing $441\frac{1}{2}$ tons of 2-in. and $1\frac{1}{2}$ -in. tar-macadam was 11s. 7d. per ton, the details of cost are as follows,

viz : —				£	s.	d.
Dry slag, 422 tons	...	...	...	127	14	5
Tar, 3,570 gallons	...	...	...	22	6	3
Pitch, 15 lbs.	...	...	...	0	0	8
Ganger, 500 hours	...	..	...	11	11	6
Labour, (manual), 2,315 hours	...	...	...	42	6	6
Sheeting on rail, etc.	...	...	...	4	10	0
Carting slag (rail to depôt), 52 days	...	...	...	18	4	0
Carting tar, 8 days	...	...	...	2	16	0
Paraffin oil, 8 gallons	...	...	...	0	5	0

					£.	s.	d.
Coke, 3 tons 6 cwt.	..	...	...	...	2	9	6
Coal, 4 cwt.	...	...	...	...	0	3	2
Cotton waste, 23 lbs.	...	...	...	...	0	4	0
Repairs to plant	...	...	...	...	0	7	0
					232	18	0
Add 10% for establishment charges, use of tools, etc.	...	...	...	..	23	5	10
Total	...	...	...	...	£256	3	10

All the tar-macadam laid in Bedford has given satisfactory results but very great care has always been exercised in the selection and preparation of the material and the laying of same on the roads, special attention being given to the strengthening of the foundation where necessary, and also in arranging the levels and cross falls.

Some of the carriageways in the principal streets in Bedford were laid with slag tar-macadam in June, 1909, and have required very little repair since that time, although subjected to incessant traffic, including steam lorries, and in many cases to the wear and tear of a constant service of motor omnibuses, which quickly cut the ordinary water-bound roads to pieces.

The work of laying tar-macadam in Bedford has been going on steadily since 1908 and at the present time there are about seven miles of carriageways in the principal streets and roads laid with tar-macadam.

The cost of laying tar-macadam on the carriageways as per short specification given is 3s. per square yard including all materials, labour, steam rolling, etc. Before 1912 the work could be executed for 2s. 9d. per square yard, but owing to the rise in price of materials, increased cost of team and manual labour, the price has advanced 3d. per square yard.

Short specification.

The existing macadam on the carriageways is first removed until the surfaces of the foundations are $4\frac{1}{2}$ in. below

and parallel to the finished levels of the new surfaces, which are arranged with cross falls varying from 1 in 24 to 1 in 32.

After the existing foundations have been thoroughly steam rolled and prepared, a layer of prepared slag tar-macadam of 2 ins. to $2\frac{1}{2}$ ins. gauge is laid down and consolidated with steam rollers until the surfaces have been brought to an even contour, and there is a finished thickness of $2\frac{1}{2}$ ins. On the bottom layer of slag tar-macadam a top layer of prepared slag tar-macadam of $1\frac{1}{4}$ ins. to $1\frac{1}{2}$ ins. gauge is laid and consolidated with steam rollers until it has a finished thickness of 2 ins.

A layer of clean slag grit is then spread on the finished surfaces of the carriageways.

The surfaces are finally tar painted and covered with slag grit.

Tar Painting.

A total length of $9\frac{1}{2}$ miles of carriageways was tar painted in the borough during 1913, the cost coming out at from $\frac{1}{2}$ d. to 1d. per square yard, according to the kind of roads treated. The work is done by two-horse drawn machines.

Granite Macadam Roads.

During the past three years the author has been experimenting with different methods of binding dry granite when re-surfacing carriageways in the suburbs, so as to do away with the old fashioned water-bound roads in the town as far as practicable, and he has found that by using $\frac{3}{4}$ in. gauge tarred slag sprinkled on the top of a layer of clean granite after the granite has been laid in position on the road, but before the granite has been steam rolled, and then after rolling the granite using a small quantity of $\frac{1}{2}$ in. gauge tarred slag and then rolled again as required, and finally finishing off with a sprinkling of $\frac{1}{4}$ in. granite chippings, he has been able to bind the granite down successfully without using any other binding material, and turn out some excellent granite roads that will stand the traffic of a main road, including steam lorries and a service of motor

omnibuses. He has also found that when the surface was tar painted there was a saving of nearly 50 per cent. on tar as compared with tar painting an ordinary water-bound road. The cost of the last road re-surfaced in this manner, comprising an area of 5,599 square yards, including all labour, materials and tar painting, comes out at slightly less than 1s. 10d. per square yard.

The author is of opinion that no hard-and-fast rules can be laid down for road-making that will be applicable to all roads and districts, but that what is required is for each engineer or road surveyor to carry out his own experiments to find out what materials and methods of construction are most suitable for use on the roads under his charge.*

Improvement of the Milk-Supply.

The following note by Dr. H. H. Mann, D.Sc., Principal of the Bombay Agricultural College, was sometime ago submitted for the consideration of Government :—

Action for the improvement of the milk supply may be taken in three directions, always considering that the best way of obtaining an improvement in the quality of the milk supplied is to cheapen its necessary cost when delivered to the consumer :—

- (i) The animals may be made to give more milk.
- (ii) The conveyance of the milk from the producers in the villages to the town consumer may be organised.
- (iii) The production of milk may be taken from the uneconomical and unsatisfactory conditions of towns to the country, and the transit to the city may be organised.

All these are necessary and in each, Government can, and I think, ought to, assist.

2. I propose that one or two dairy experts shall be obtained and maintained by Government. The best for this purpose would be obtained from the military dairy department, men like

* The Municipal Journal.

Mr. Horne, at a cost of Rs. 300 rising to Rs. 500 per month. If well chosen these would do excellent work, and they are the best trained dairymen in the country. Ordinary men from England would not be very suitable, as they know nothing about the buffalo, our most important dairy animal.

They would—

(1) make a thorough inquiry into each of our breeds, its dairy possibilities, and where the best animals can be obtained ;

(2) arrange for the obtaining of animals of each breed for associations, who would establish herd-books, or for Government if the duty fell on its shoulders ;

(3) attempt in conjunction with the Deputy Director of Agriculture to interest local gentlemen, ināmdārs, jāghirdārs and sardars in the establishments of herds of pure bred animals ;

(4) obtain and place pure bred good bulls of each breed it is desirable to encourage ;

(5) assist in arranging, in conjunction with the Civil Veterinary Department and the Deputy Director of Agriculture, shows of milch cattle and buffaloes in milk-producing centres with substantial prizes ;

(6) investigate in connection with each of the big cities the best places for the establishment of milk farms, and the best method of organising them, whether by co-operative or capitalist agency ;

(7) organise a regular system of dairy education, in connection with the Agriculture College and the Kirkee Civil Dairy, which should be perfected and modernised for the purpose. This is the only method of extending the knowledge of dairy management.

I would recommend two men to start with, and the exact manner in which they would work can be considered when the principle is accepted.

3. I propose that dairy companies, and co-operative associations for city milk-supply, or for the maintenance and improvement of milk breeds, if opened in suitable situations, and if they submitted to Government inspection—both financial and technical—should be open to receive the following advantages :—

(a) land without assessment for a term of years, say five,

- (b) money to the extent of one-third of the capital cost at $6\frac{1}{2}$ per cent. interest, to be repaid like a *takavi* loan.
- (c) the services of the above mentioned experts in the selection of cattle and buffaloes, in drawing out estimates and in any other way.

4. I propose that prizes be founded to the amount of Rs. 10,000 per annum in all to be awarded at shows held in the principal dairy centres for pure bred animals or animals of recognised crosses each year, chiefly on a basis of milk production.

5. I propose that special efforts should be made towards the organisation of co-operative milk-supply, and all in connection with it. I would suggest that a special officer of the Co-operative Department, akin to the special *mamlatdars* in that Department, should be appointed for this purpose for three years.

6. I propose that a class in simple milk-testing should be opened for sanitary inspectors, and apparatus for this supplied to municipalities who have trained inspectors. We could deal with such a class at the Agricultural College. I think three weeks would be required and the class might be held once a year.

Mr. G. F. Keatinge, C.I.E., I.C.S., the Director of Agriculture, recommended that the whole question of the improvement of the milk supply should be submitted to a committee of agricultural and municipal experts before any action could be taken on Dr. Mann's note. The Bombay Government have accordingly appointed a strong committee with Mr. Keatinge as president, to consider the question of the milk-supply in large towns. The committee is a large and representative one and Dr. Mann is also in it.

The Government recommend that the Committee should take for its basis the resolution of the Board of Agriculture held at Coimbatore in December 1913 and the report of the Committee printed at pages 51-52 of the proceedings of the Conference. It should frame an account of all that has been done under each of the heads of that report and what is in course of being done, and indicate the directions in which the

next steps should be taken. The committee is requested more particularly—

(1) to indicate the most suitable localities in which scientific dairying can be undertaken with reference to—

(a) the demand for good milk.

(b) the possibility of obtaining a supply of good fodder,

(c) transport facilities,

(ii) to indicate the agency by which such operations can be most profitably undertaken and the exact nature of Government assistance that would be required to give them a fair start,

(iii) to indicate the best methods of organizing and controlling the existing agencies which supply milk to large cities.

The committee meets in Poona during the rains and its report should be submitted to Government before the end of November 1915.

A Lesson on Malaria.

MALARIAL fever is a serious disease which weakens the constitution or causes the death of thousands of people—especially young people—every year. It is due to parasites which enter the blood of man through the bite of the mosquito. There are two kinds of cells in the blood, red and white. Malarial parasites attack the red cells and destroy many of them; hence it is that a person suffering from malaria becomes pale and weak. The parasites also cause a chronic inflammation of the spleen which leads to its gradual enlargement. There are three different kinds of malarial parasites; one kind multiplies in the blood so rapidly that a fresh brood is brought forth every twenty-four hours; another kind of parasite multiplies every forty-eight hours and in the third kind, the fresh brood takes seventy-two

hours for its production. All this multiplication takes place in the blood of man and it is just while the fresh brood is being hatched out in the blood that a person gets the attack of fever. The kind of his fever therefore depends upon the kind of parasite with which the man has been inoculated by the mosquito. The first sort of parasite will give him fever every day. The second sort will give him fever every other day (this is the most common sort), and the third sort will cause an attack of fever every third day, supposing that in all cases the disease is left untreated.

Apart from the fact that each of the three parasites causes a different kind of fever, each of the parasites is of different appearance from the others and when the blood is examined under the microscope, a skilled person can tell at once from the appearance of the parasite what kind of malarial fever the patient is suffering from.

The parasites may be so numerous in the blood of a person suffering from malaria that each drop contains hundreds of them. Female mosquitoes live upon blood and in order to get their meal they readily bite man and suck several drops of blood at one sitting if undisturbed. If the man on whom they feed happens to have malarial parasites in his blood, many of these will find their way into the stomach of the mosquito. Should the mosquito be a particular kind of anopheles, some of the parasites will develop in its stomach and bore their way through the stomach wall into its tissues and eventually find their way into its salivary glands. When that mosquito bites a man, it injects into his skin some of the contents of its salivary glands which causes the itching sensation with which we are all so familiar when a mosquito has bitten us; and in this salivary gland matter are malarial parasites which have thus been transferred from one man to another. These parasites multiply in the man's blood very rapidly and when sufficient multiplication has taken place, the man gets an attack of fever to be followed thereafter by attacks every 24 or every 48 or every 72 hours.

The mosquito having bitten a malaria patient cannot immediately transfer his parasite and his fever to another person. Several days (about a week) must elapse after the mosquito has swallowed the malaria blood, before the parasites find their way into its salivary glands. Nor is fever caused immediately after the infected mosquito injects the parasites into a healthy person. The mosquito only injects a few parasites and these must multiply into some millions in the man's blood before they are capable of causing fever. Ordinarily, it takes from 14 to 24 days from the date of the mosquito bite until the parasites have developed sufficiently to cause the first attack of fever.

Not all mosquitoes are capable of carrying malaria; it is only certain species of the dappled winged mosquitoes called anophelines and only their females which are thus gifted.

The other and most common kind of mosquitoes are called culicines. They do not carry malaria but they carry about from person to person the parasite known as flaria which produces a severe kind of fever which in turn may end in elephantiasis. So all mosquitoes in and about towns and villages should be exterminated, and this can be done if the people co-operate one with another.

Adult anopheline mosquitoes may be recognised by the fact that when resting on a wall they hold their bodies at an angle to it, the head, proboscis (the biting mouth parts of a mosquito) and body are in a straight line and the insect looks like a small thorn stuck slanting in a wall. Culicine mosquitoes rest with their bodies parallel to the wall and appear as if hunchbacked. In anophelines, the colour is light or dark brown, in culicines grey or brown or black with white bands or markings. In anophelines the wings are spotted, in culicines the wings are plain.

All mosquitoes breed in water. In water they lay their eggs, the eggs hatch in water and in from 24 to 48 hours the larvæ or wrigglers are set free therein. They must then remain beneath the water surface in order to obtain their food.

They need to come to the top at frequent intervals to breathe, otherwise they would drown. They breathe by means of a siphon at the tail end of the body. The wrigglers cannot develop in damp grass or moist soil. They live in water at least one-half inch deep, so that when fully grown and floating with their heads down they do not touch the bottom.

The larvæ of anophelines are easily known by their lying flat just under the surface of the water and by their moving backwards in jerks. Culicines hang in water head downwards and have a long breathing tube; they move forward with a wriggling motion.

The larvæ or wrigglers require from six to ten days or sometimes less to grow to their full size. When they have grown to their full size, they suddenly wriggle out of their skin and appear as totally different insects darting about in the water. These insects are called pupæ or nymphs. This stage lasts from two to four days. Then they float on the surface of the water and from them the mosquito emerges as a winged adult, fully developed and ready as soon as it has had a meal to reproduce its kind. In three or four days she will lay her first batch of eggs upon the water and at night will go forth to suck more blood in order to lay more eggs.

Mosquitoes may breed in any collection of water in houses, pools, cisterns, drains, tanks, wells, canals, and water channels of all kinds. They cannot breed in shrubberies, crotons, flower pots, etc., unless there is stagnant water at least half an inch deep.

It is very important to prevent mosquitoes getting at the water in or near houses by keeping water vessels covered, and to prevent water collecting near houses. Any unnecessary articles that can hold water such as old and broken chatties, kerosine oil tins, broken bottles, etc., should be cleared away from houses; all pools of stagnant water near houses should be abolished by filling up the holes in which they occur. Where pools cannot be filled up, a little kerosine oil (about

half a teacup for a square yard of surface) should be thrown on the surface of the water twice a week. This kills all the larvæ. It is wise to try and kill all mosquitoes found in houses as some of them may already be infected with malaria.

So far as is known, the mosquito is the only agency by which malaria is spread. Repeated experiments have proved that drinking the water from a highly malarious place will not cause malaria. If therefore there were no mosquitoes, there would be no malaria; and if a person can protect himself completely from ever being bitten by a mosquito, that person can never get malaria. It is for this reason that officers touring in malaria places endeavour to avoid being bitten by using mosquito nets, but as they cannot always remain under the mosquito nets they sometimes do get bitten and sometimes do get attacked with malaria.

Conversely, if there were no human beings, the mosquito would never get infected with malaria and in remote jungle places where no one lives, although anophelines may be swarming, yet, as none of them can get infected, they may bite a chance visitor but cannot give him malaria. This gives us a direct clue to one of the methods of avoiding malaria. When touring in a noted malaria neighbourhood, do not, if it can possibly be avoided, camp or halt for the night in or near a village or human habitation; half a mile away will be safe. It is possible that there may be amongst one's followers in camp a person in whose blood malaria parasites already abound, but if one does not halt in the same place for a week or upwards even that servant is harmless as the mosquitoes which he infects are not capable of infecting another person until the lapse of at least seven days after biting him, so they are left behind when the camp moves and infect no one. It is the old infected mosquitoes in the neighbourhood of human habitations that are dangerous.

There is only one drug known at present which kills the malaria parasites in a man's blood and that drug is quinine. Instructions as to its use are contained in the appendix.

In a malarial locality almost all the children have malarial parasites in their blood and most of these children have enlargement of the spleen due to these parasites. All children who get malarial fever and all who have enlargement of the spleen should be given quinine every day for three months. This will completely cure them of malaria, but steps must be taken to protect them from being again bitten and being again infected, by destroying all the mosquitoes about their dwelling place.

Remember--

(1) That malaria is carried from an infected to a healthy person by the mosquito and not, so far as is known, by any other agency.

(2) That, therefore, if you have no mosquitoes or can prevent mosquitoes from biting you, you can never get malaria.

(3) That mosquitoes breed in water only and that where there is no water there are no mosquitoes and no malaria.

(4) That it is not necessary to destroy all the mosquitoes in a district; it is only those in and around human habitation which are dangerous. If the area for a quarter of a mile around habitations is free from breeding places, you will have few or no mosquitoes and no malaria.

Appendix.

QUININE—THE CURE FOR MALARIAL FEVER.

It is hereby notified that quinine for the cure of malarial fever is for sale at all Post offices.

Each packet of quinine contains ten grains and costs three pies or quarter of an anna.

Instructions for self-treatment by quinine.

1. Each packet costing three pies or quarter of an anna contains ten grains of quinine in powder. The powder should be invariably taken dissolved in water to which some lime-juice, tamarind water or vinegar has been added.

2. *Curative treatment for ordinary intermittent malarial fever in the case of adults.*—Take a purgative, and when it has acted, take four doses of five grains each at intervals of six hours daily for three days. The first dose should be taken immediately after the purgative has acted, whether fever be present or not. Then take two doses of five grains daily for three more days and thereafter one dose of five grains daily for a month.

3. *Curative treatment for severe continuous type of malarial fever in the case of adults.*—After a purgative has acted, take two doses of ten grains each and two of five grains each on the first day at six hours' intervals; then four doses of five grains each for two days, and then two doses of five grains each daily for three more days and thereafter one dose of five grains every day for one month. Afterwards one dose of five grains should be taken twice a week, say, on Wednesdays and Sundays, for another two months.

4. *Curative treatment for children.*—The treatment is on the same lines as for an adult, but the dose varies with age. For a child of 10—12 years, give 15 grains a day in three or four doses for first three days and then as for an adult—*vide* paragraph 2 above. Smaller doses should be given according to age. *e.g.*, for a child of five or six years, give four or five grains in two doses daily and below that age half the quantity. In the case of children some sugar should be added to the water in which the quinine has been dissolved.

5. *Preventive treatment.*—When travelling in a malarial tract, take five grains every evening at sunset and continue the treatment for 10 days after leaving the area.

6. Where more exact means of measurement are not available, it may be noted that the amount of quinine sulphate that can be heaped on a one pie piece is roughly three grains and on a uickel anna piece six grains and in the case of quinine hydrochloride half these quantities.

Notes.

RUSSIAN GARDEN CITY ASSOCIATION.—A memorial has been presented to the Lord Mayor and Municipality of Moscow by the Russian Garden City Association in regard to the proposals which have been made for the expenditure of the sum of £1,300,000 left by the late Mr. G. G. Solsdovnikof, for the housing of the poorest class of the population. It has been suggested that huge tenement dwellings be erected, and in the careful memorandum which the Association has prepared, covering ten foolscap printed pages, the arguments against block dwellings are forcefully marshalled, and the universal testimony of housing reformers the world over is quoted.

BIRTHS NOTIFICATIONS.—The Notification of Births (Extension) Bill got its third reading last month. The Bill makes notification compulsory, and gives the Councils concerned the optional power, subject to Local Government Board sanction, to make arrangements for attending to the health of expectant mothers and nursing mothers, and of children under five years of age who are not being educated in public Elementary Schools.

COTTAGES FOR THE WORKING CLASSES.—Glasgow is considering a scheme to build cottages for the working classes, of three and four apartments, in the suburbs, the cost of which is estimated at £240 and £295 per cottage (inclusive of cost of site, roads, &c.), to be let at £8-10s. per annum respectively. It is proposed to take from the common good £30,000, free of interest, to finance the scheme, which explains the low rents in this connection.

STUDENT MOVEMENT FOR MUNICIPAL INSTRUCTION.—The undergraduates of Rutger's College (New Brunswick, N. J.) are advocating the establishment of a course in Municipal Government.

CHANGING THE NAME.—The Municipal Council of Rome, evidently anticipating that Italy would enter into the great European fight, has re-named Frederick William Bridge to Albert Bridge in honour of the King of the Belgians.

[Madras.]

DELEGATION OF POWERS.—Under section 160 of the Madras Local Boards Act of 1884, the Governor in Council has been pleased to delegate to Presidents of District Boards the following powers vested in him by the Act, viz:—

(1) power under s. 100-F to sanction proposals of taluk boards to close burial or burning grounds which have been in existence since the date of the coming into operation of the Act but which have no owner or other person having the control of them; and,

(2) power under s. 117-Q to extend the operation of sections 100-E to 100-K to non-union areas.

CONSTITUTION OF TALUK BOARDS.—The Governor in Council has been pleased to declare that the maximum number of persons to be appointed as members of the undermentioned taluk boards and the number to be appointed by election shall for the time being be constituted in the manner shown below:—

District.	Name of Taluk Board.	Maximum Strength.	No. of Members to be elected.
North Arcot	{ Cheyar	18	9
	{ Ranipettai	18	9
South Arcot	Tindivanam	24	12
Madura	Dindigul	24	12
Trichinopoly	Kadur	21	10
Vizagapatam	Narasapatam	21	10

Erode Municipality.

TREATMENT OF PATIENTS IN THE MUNICIPAL HOSPITAL.—The following rules for the treatment of patients in the Municipal Hospital, Erode, are published under section 256 (1) of the Madras District Municipalities Act:—

The following fees will be charged at Municipal Hospital, Erode :—

Out-patient.—If the monthly income of the patient or the head of his family is Rs. 50 or above and he does not subscribe at least annas 8 per mensem to the Hospital a fee of six pies for each day on which any medicine or attendance is received.

In-patient.—When the monthly income of the patient or the head of his family is—

- (1) Rs. 50 to 100 the fee to be annas 8 per diem.
- (2) Above Rs. 100 the fee to be rupee one per diem.

Anantapur Municipality.

PROVIDENT FUND.—The Government have approved the proposal of the Anantapur Municipal Council to establish a Provident Fund for the benefit of the teachers of the Municipal High School.

Kurnool District Board.

TRAVELLING DISPENSARIES.—In his letter No. 553 dated 5th June 1915, the Surgeon-General, Madras, enquired as to whether the District Board, Kurnool, was in favour of converting the Itinerating Dispensary into a Travelling Dispensary of the type working in the United Provinces for operating and treating all diseases. The District Board has informed the Surgeon-General that its finances do not permit an experiment of that kind at present.

Madura District Board.

DISTRICT RAILWAY LINE.—The following resolution was passed by the Madura District Board in reply to the Government memorandum requesting the President to submit more definite proposals and in particular to show how the District Board proposes to raise the money required for (a) financing the Madura-Bodinaickanur line and (b) participating in the Dindigul-Palghat line :—

On the understanding that the Government have no intention of allowing the Dindigul-Palni line to be constructed

by the District Boards (on which point the Board does not now feel called upon to express an opinion)—the District Board proposes to finance the Bodinaickanur-Madura line by raising debenture loans for the whole amount which, they hope, will be under-written by the Bank of Madras on the same favourable terms as in the case of the Coimbatore District Board (Podanur-Pollachi line); as regards the accumulated cesses which are kept in reserve, the Board is inclined to invest them in the new company to be raised by Messrs. Binny & Co., but would like first to know the terms of the agreement of the new company with the Secretary of State. In particular, the Board request an assurance that they, like the Coimbatore District Board, will be granted an under-writing commission on the amount subscribed by them and that the President or his nominee should have a seat on the Board of Directors without being allowed to interfere with the election of the other Directors. They would also suggest that in case the Government reserve a right of purchase of the line and should at any time exercise that right, the District Board may be given the option of purchasing the line before it is offered to any private company.

Kumbakonum Municipality.

DRAINAGE.—In considering Government memorandum regarding the drainage scheme of Kumbakonum, the Municipal Council has passed the following resolution:—

The Council are of opinion that all the sanitary lanes should be acquired at once as the first part of the drainage scheme and that application should be made to Government in the first instance for the grant of one lakh of rupees and for the loan of another lakh.

The Council are also of opinion that the Water and Drainage tax may be raised from 2% on the rental, the present rate, to 4% with effect from the current year.

[Bombay.]

Bombay Corporation.

THE LATE HON'BLE MR. FAZULBHOY MEHERALLY CHINYOY.—At the meeting held on the 22nd July 1915, the Bombay Corporation passed the following resolutions:—

That the Corporation deeply deplore the untimely death, on the 21st instant, of the Hon'ble Mr. Fazulbhoj Meherally Chinoy, C.I.E., who, as a member of the Corporation for 9 years and as a member of the Standing Committee for 6 years and its Chairman for the year 1913-14, and generally as a public spirited citizen and a leading member of the Mahomedan community and their representative on the Legislative Council, rendered useful and valuable services to the city and endeared himself to his colleagues and the general public by his unfailing courtesy and amiable disposition.

2. That a copy of this resolution be forwarded to the family of the deceased with an expression of the Corporation's sympathy in their bereavement.

3. That as a mark of respect to the memory of the deceased, the meeting do adjourn without proceeding to the transaction of business.

[Punjab.]

Murree Municipality.

BAKERY.—The following bye-laws framed by the Municipal Committee of Murree, under sections 197 (a), (b) and (g), 188 (e) and (i), and 199 of Act III of 1911 (The Punjab Municipal Act), have been confirmed by the Lieutenant-Governor under section 201 (1) of the said Act:—

1. "Bakery" means a building in which bread, biscuits, confectionery or the like are prepared or baked for sale for the public.

2. No premises shall be used as a bakery except under the license granted by the committee. An application for a license shall be referred to the Sanitary Inspector or the Secretary for

report, and no license shall be granted unless the Civil Surgeon certifies that the premises are suitable for use as a bakery.

3. No premises shall be licensed as a bakery which are situated within 100 feet of a cow-house or stable or sewer, or in any building which is underground.

4. Every license granted by the committee for a bakery shall specify the time for which it is in force, but no license shall be granted for a longer period than one year and every license shall terminate on the 31st March in each year. The license shall be subject to the following conditions:—

(1) No privy, ashpit or drain shall be within, or shall communicate with, the bakery.

(2) No drain or pipes for carrying off sullage or sewage matter shall have an opening within the bakery.

(3) The bakery shall be kept clean, and shall be lighted and ventilated to the satisfaction of the Committee.

(4) All the inside walls and all the ceilings or roofs of the bakery, whether plastered or not, and all passages and staircases shall be lime-washed at least once in every three months, and the floor, kneading troughs, tables and utensils shall be thoroughly scrubbed and washed with water daily.

(5) No person shall dwell or sleep in the bakery.

(6) No person shall keep in any bakery any *hookah* or other appliance for smoking or any bedding or soiled clothes.

(7) No person other than employees of the bakery or an inspecting member or official of the board shall be allowed to enter therein.

(8) No animal shall be kept in the bakery.

(9) All dough and other materials used in preparing the products of the bakery, and the products of the bakery, shall be kept in clean receptacles and be cleanly covered.

(10) The bakery shall be open at all reasonable hours to the inspection of the Committee or of any officer appointed on this behalf.

(11) No person suffering from any contagious or infectious disease shall be employed in the bakery.

(12) The floor must be paved or concreted and properly drained.

5. The Committee may revoke a license on being satisfied of a breach of any of the conditions of the license.

6. On receipt of an application for license, the licensing officer appointed by the Committee may either grant the license or refuse to grant it ; in the latter case, he shall record his reasons in writing and at once report his action to the Committee.

7. The licensee and his servants shall be required to wear clean white clothes while at work.

8. The person to whom a license has been refused under rule 6 may appeal to the Committee within 15 days from the date of such refusal.

9. Any person committing a breach of any of these rules shall be punishable on conviction with a fine which may extend to fifty rupees, or in the case of a continuing offence, with a further fine which may extend to five rupees for every day after the date of the first conviction during which the offender is proved to have persisted in the offence.

[Central Provinces.]

Pachmarhi Municipality.

CONSERVANCY OF BUNGALOWS.—In exercise of the powers conferred by Section 105, Sub-section (3), of the Central Provinces Municipal Act, 1903 (XVI of 1903), the Chief Commissioner has been pleased to confirm the following by-laws made by the Municipal Committee of Pachmarhi, in the Hoshangabad District, under Section 105, Sub-section (1), clause (s), and Section 105, Sub-section (2), of the said Act for regulating the conservancy of bungalows, etc., within the limits of the Pachmarhi Municipality :—

1. In the compound of each bungalow there shall be erected, at the cost of the house-owner, a servants' latrine and a private

rubbish-bin, each of a plan and on a spot approved by the Committee. Such latrine and rubbish-bin shall be kept in a good state of repair.

2. All rubbish of the house and compound such as uprooted weeds, stable litter, cattle droppings, brickbats, fallen leaves, rags or waste paper except garden manure, which shall be covered with one foot of earth, shall be collected daily by the occupier's servants and placed in the rubbish-bin from which it shall be removed, as quickly as may be, by the rubbish-cart of the Committee.

3. All sewage of a house and the servants' latrine attached to it shall be collected by the occupier's sweeper in iron receptacles to be supplied by the owner. The receptacles shall be of a pattern approved by the Committee and shall be kept in a sanitary condition.

4. The waste water from the bath-rooms and servants' quarters shall be properly drained off and shall not be allowed to collect in pools.

5. Twelve feet of space all round the latrines and rubbish-bins shall be kept free of grass and shrubs by the private sweeper attached to the house, who shall also be responsible for the cleanliness of the servants' latrine and the compound.

6. No crop or temporary structure, which is declared by the Committee to be objectionable, shall be allowed to remain in any compound.

7. The owner of each house, or the person in charge thereof on his behalf, shall cause the compound to be kept well drained and free from high grass, weeds and holes.

8. The owner of each house, or the person in charge thereof on his behalf, shall cause the house, and its outbuildings to be kept in proper repair, *i. e.*, in repair which shall be judged by the Committee to be proper repair.

9. No person shall answer a call of nature within any compound save in the house or latrine attached to the house or in the servants' latrine.

10. Every owner or occupier of a house, land or premises shall give the sweepers of the Committee free access to the servants' latrine and rubbish-bin for the purposes of removing the nightsoil and rubbish therefrom.

11. Any person infringing any of the above by-laws shall be held to have committed an offence under the Municipal Act and shall be liable to fine which may extend to fifty rupees and, when the infringement is a continuing one, to further fine which may extend to five rupees every day after the first during which the infringement is proved to have been persisted in.

[Bengal.]

Bhagalpur Municipality.

WATER WORKS (1915-16).—The following improvements were proposed to be carried out by the Bhagalpur Municipality:—

	Rs.
1. Lining of the 4 Settling Tanks ...	47,153
2. Stopping leaks in 4 Filter Beds ...	10,800
3. New Clear Water Reservoir... ..	23,000
4. New Storage Reservoir	6,724
5. New Service Reservoir with pipes ...	44,542
6. Re-building superintendent's quarters including lands	11,252
7. Connection Pipes to clear Water Reservoir	3,415
	<hr/> 1,16,886 <hr/>

The Sanitary Board have decided to ascertain whether a pure water supply can be obtained from underground by means of a boring before proceeding with any other part of the improvement scheme. The improvement works have, therefore, been put off at present under the instructions of the Sanitary Board.

Khulna Municipality.

LEVY OF WATER-RATE.—In exercise of the power conferred by Section 86 of the Bengal Municipal Act, 1884 (Bengal Act III of 1884), the Governor in Council is pleased to sanction the levy, by the Commissioners of the Khulna Municipality, in the district of Khulna, under Sub-section (1) of Section 279 of that Act, of a water-rate within the Khulna Municipality.

2. In exercise of the power conferred by clause (1) (a) of Section 279 of the same Act the Governor in Council is pleased to declare that such water-rate may vary with the distance of houses or lands from the nearest standpipe or other source of water-supply.

3. In exercise of the power conferred by clause (a) of the first proviso to Section 279 of the same Act, the Governor in Council is pleased further to direct that the water-rate shall not be levied upon any house or land within the said Municipality, no part of which lies within a radius of 1,000 feet from the nearest standpipe or other supply of water available to the public.

Public Health and Sanitation.

Model Lectures on Sanitary Subjects.

[PREPARED BY MAJOR W. A. JUSTICE, M.B., C.M., D.P.H., I.M.S.]

Hygiene in relation to Buildings and Streets.

THE arrangement of houses and huts and other buildings in a town and the alignment of the streets has an important bearing on the health of the people. It is necessary that all houses should have plenty of air for ventilation, and to do this they should be freely exposed to the prevailing winds. Houses built with their back-wall against each other known as back-to-back houses should never be allowed, as fresh air does not circulate through them. Doors and windows both at the front and at least a window at the back are absolutely necessary for the circulation of air through the room (perflation). Broad streets allow free circulation of air to the houses on each side of it. Special attention should be paid to the planning out of towns. A plan showing directions in which it is to 'grow—the class of house to be built—the arrangement of the roads and conservancy lanes, all these and many other points should be specified in a plan before any one is allowed to build a house.

In this Presidency, most of the towns have been allowed to grow up indiscriminately without any plan of arrangement and now we have overcrowded areas which it is next to impossible to improve; drainage is impossible, and the only thing to be done is to gut them out.

Houses.—A house should never be more than 40—50 feet deep—they should have a damp proof course between the ground and the floor—generally 9 inches above the ground. Moisture is taken up by bricks and mortar from the ground and renders a house very damp unless it has what is known as a damp proof course.

Every house in the tropics should have a good verandah; it should be 10—12 feet deep; smaller than this is useless as they give rise to headache and the inside rooms get hot. The verandahs should also be high and should be protected from rain by shutters. High and lofty rooms are just as important as they are cooler than rooms with low roofs. The front of the house should never face east and west on account of the rays of the sun entering the house morning and evening and making the house hot. The aspect should be north and south, if possible.

Roof.—In this country of heavy downpours of rain, it is necessary that the roof should be sound and well made. Good concrete should be employed in roofs which are terraced. It is also desirable that there should be a space for ventilation between the roof and the ceiling.

Corrugated iron roofs are not good unless they are covered with thatching or lined with wood or felt inside.

Thatched roofs harbour vermin, snakes and rats. Mangalore tiles make very good roofs, but they are uncomfortably hot in the hot weather. But if a space for ventilation and wood ceiling is provided, this inconvenience is overcome. Care should be taken that the openings at the sides should be

protected with mosquito wire-netting to keep out rats and other animals. Foundations should be of concrete to keep out dampness arising from the soil.

Every house should have drains around it to carry away the rain water which falls from the roof.

The latrine of the house or receptacle should be away from the house and near the conservancy lane. Commode in bath-room with a sweeper in attendance is the best for this country. Courtyards in the centre of houses on to which all the rooms of the house should open are efficient means of ventilating houses in India; the air blows through the house into the courtyard which acts as a ventilating shaft and keeps the rooms likewise cool.

Huts and Hutting grounds.—The problem of housing the poor has always been a difficult one in all countries, and we in this country are in no exception to the rule. The chief difficulty lies in making the dwellings of the poor to pay and consequently there has been very little of private enterprise in this direction. It is difficult to find suitable building sites for the location of houses for the poor for the same reason. It is generally the rule to allot only such sites as are unfit for any other purpose for the accommodation of the poor. In the absence of facilities for easy communication, it is difficult to locate them any distance away from the town itself. The poor are either daily labourers or domestic servants and they always prefer to dwell near the scene of their labour. They often are content with locating their huts in unhealthy sites close to the factories or in low-lying fields close to better class dwellings. Model dwellings put up at public expense in some of the large towns yield practically no returns. The problem is admittedly a most difficult one. The sanitary requirements of dwellings for the poor are (1) suitable sites, (2) suitable buildings.

(1) *Sites.*—The site for dwellings for the poor in addition to conforming to all the sanitary requirements of an ordinary building site, should as far as possible be isolated for better

class dwellings. The site should be well laid out with ample open space about it. It should be well drained and there should be ample supply of water in the near neighbourhood.

(2) *Dwellings*.—Dwellings of the poor are generally mud-walled huts with thatched roofing. The size and condition of this vary very much. They range from tiny single celled huts barely 6' square with the eaves almost touching the ground, to long lines of rooms from 8' to 10' square with a small verandah in front and a slope kitchen behind. As a rule, poor class dwellings are detached and are often irregularly clustered together with very little of open space between them. Most of the huts, nowadays, are made of mud or clay. The roofing is either of Indian tiles or thatching supported on casuarina or other cheap junglewood rafters and bamboo reapers. After a time, heavy tiles especially during rains—from their weight—fall in and crush the inmates. Thatching harbours vermin and dust and it is liable to catch fire easily. What is wanted is some design which will combine stability with cheapness.

The basements of huts should be well raised and the rooms should have a minimum floor space of 80 square feet and should have at least a door 5' \times 3' and a window 3' \times 2' on the wall opposite to the door. The eaves should be at least 6' from the ground and should project 3' out from the wall so as to protect it from weather. There should be a minimum open space of 6' between two adjoining huts. Every hut should have an impermeable floor. Huts should be arranged in regular lines and where there is a backyard, there should be conservancy lane at the rear. A washing masonry platform with a drain leading from it to the street drain is a necessity for every hut. Every well-arranged hutting ground should have its own latrines and bathing and washing places. It is preferable to have tiled roofs for huts, but care should be taken that the material used for rafters and reapers are good and lasting and that the walls are sufficiently strong and protected from rain,

The Dust Nuisance.

Observe that the first great difference in the environment of towns and country is that town air is laden with the products of combustion chiefly sulphurous acid and soot, and with dust of special composition.

Street dust is made up chiefly of soot, debris pounded from the roadways and horse dung. To the last mentioned summer diarrhoea has been attributed.

Note the penetrating nature of dust. It finds its way into air-tight drawers, between the leaves of closed books and into the interior of watches. Bear in mind that household dust is made up of street dust together with soot and dust from fire and gaslights, and a mass of cotton fibre, wool, epithelial cells and detritus of all possible kinds. It may contain innumerable species of moulds and bacteria, harmless and harmful. Remember that the greatest sources of pollution of modern town air are smoke and dust.—*Golden Rules of Hygiene.*

Vacuum Street Cleaning.

IN Huddersfield, England, recently a demonstration was given of a motor vacuum street cleaner, the invention of an Italian. The machine is operated upon the principle of a rotary brush and suction, together with a system of pumps and jets for spraying atomised water on the road surface in front of the brush thus insuring dustless and hygienic sweeping. The tests were made on various conditions of roadways, some being specially prepared to give the machine a still test. It is stated that the result was excellent, and apparently it will not be long before a much needed revolution in street cleaning will be brought about by the motor-vacuum system.



Government Orders and Notifications.

[Madras.]

DIVISION OF MUNICIPALITIES INTO WARDS :—The attention of the Government has been drawn to the very serious inequalities which result from the present divisions of municipalities into wards and the distribution of elective seats amongst them. Local peculiarities and local circumstances have to receive consideration, and it is probably impracticable to lay down any set of general principles which could be strictly applied to every town in the Presidency. The Governor in Council believes, however, that the time has come to revise the existing divisions and that it is possible and desirable to indicate the main considerations which should guide municipal councils in dealing with this matter.

2. No scheme for dividing a municipality into wards will be satisfactory which disregards commercial, historical, geographical and other natural divisions. Thus, it would be generally inconvenient to allot one side of a street to one ward and the other side to a different ward or to form portions of a town divided by a river or canal into one ward. Other examples of natural electoral units are afforded by (1) villages which, though incorporated in a municipality, have retained their individuality, (2) quarters of a town inhabited by particular classes of artizans and (3) compact aggregations of citizens united by a racial or religious bond. The application of these principles is, however, subject to the limitations indicated below.

3. In the first place, it is desirable that wards should not differ widely in general importance. The factors to be taken into consideration in deciding on the relative importance of wards are the population, the number of voters and the aggregate revenue derived from the ward. An even more important consideration is that no wards should be so small and contain so few voters as to deprive elections of all interest and significance. That small electorates offer special facilities and temptations for corrupt practices is a truism which cannot be

ignored in this connection. The Government are not at present prepared to lay down hard and fast rules as to the minimum number of voters required to constitute an electoral ward; but they consider that it will generally be found practicable to secure a minimum of 200 voters for each ward in any of the larger municipalities and a minimum of 100 voters elsewhere.

4. Where a natural group of the kind indicated in paragraph 2 of this order would, by itself, be insufficient to form a satisfactory ward, two or more groups of the kind might serve the purpose.

5. In the case of the larger municipalities, with a population of about 50,000 (or more), such as Madura, Trichinopoly, Calicut, Tanjore and Kumbakonam, the object to be aimed at is to divide the town into as many such wards, as there are elective seats, as in Madras City; each ward will then have one representative in the council. When this course is found to be impracticable, as will not infrequently be the case in the smaller municipalities, each ward should be assigned a number of seats corresponding, as far as possible, to its relative importance, as indicated by population, the number of qualified voters and the aggregate revenue derived from the ward.

6. To take a particular example; suppose that a town has eight elective seats on its council, that it contains a population of 31,645 of whom 637 are qualified voters, and that its aggregate municipal revenue is Rs. 30,871. In this instance, each elective seat represents on the average 3,956 persons, 80 voters, and a revenue of Rs. 3,859. A ward which has a population of 8,345 and 139 voters and provides an aggregate revenue of Rs. 4,931 will accordingly be entitled to

$$\text{have } \frac{1}{8} \left\{ \frac{8,345}{3,956} + \frac{139}{80} + \frac{4,931}{3,859} \right\} = \frac{1}{8} (2.109 + 1.737 + 1.277) = \frac{1}{8} (5.123);$$

i. e., 1.707 or (roughly) two elective seats. Calculations on these lines will be found convenient,

- (1) for the purpose of dividing a municipality into wards,
- (2) for the purpose of ascertaining the relative importance of wards.

7. Municipal Councils are requested to examine the wards of their towns in the light of these observations and to submit, as early as possible, through the Collector of the district, proposals for their redistribution and for the reallocation of seats therein.—(G. O. No. 1040 M., dated 12-7-15).

Legislative Intelligence.

[Bombay.]

THE Hon'ble Mr. Dattatraya Venkatesh Belvi asked when the Government expect to introduce a Bill to amend the Bombay Local Boards Act, 1884.

Government replied that a Bill further to amend the Bombay Local Boards Act, 1884, was under reference to the district officers and the local boards but that they were unable to say when it would be introduced in the Legislative Council.

The Hon'ble Rao Saheb Venkatesh Shrinivas Naik asked Government to state how many nurses are trained and sent out every year from different hospitals and nursing associations fit for appointment in the mofussil hospitals and dispensaries.

Government replied as follows: The accompanying statement shows the average numbers of trained nurses annually sent out fit for appointment in the mofussil hospitals and dispensaries. Nurses trained by institutions other than those mentioned in the statement have been omitted from it as they would not be accepted as suitable for appointment in the institutions referred to.

NAME OF INSTITUTION.	Average number of trained nurses annually sent out fit for appointment in the mofussil hospitals and dispensaries.
J. J. Hospital Nursing Association ..	27
Sassoon Hospital Nursing Association ..	15
St. George's Hospital Nursing Association, ..	9
Karachi Civil Hospital Nursing Institution ..	4
Ahmedabad and Lely Memorial Nursing Association ..	1
Cama and Abless Hospital Nursing Association ..	5
TOTAL ..	61

The Hon'ble Mr. Patel asked whether Government have received any communication from the Government of India with reference to the amendment of sec. 3 (j) of the Bombay Town Planning Act, 1915, and, if so, whether Government have any objection to lay on the table a copy of the said communication.

Government replied: A communication from the Government of India was received in February 1915. Government do not propose to lay the letter upon the table, but the Government of India drew attention to the fact that the sub-section was too wide, and suggested the advisability of amending it. Government propose to introduce a short amending Bill at an early date.

[United Provinces.]

The Hon'ble Rana Sir Sheoraj Singh asked Government to state (a) the number of deaths from plague and cholera in the United Provinces during the past three years and (b) the names of the first three districts in which the diseases were most prevalent.

The following statement was placed on the table in reply :

(a) *Statement showing the number of deaths from plague and cholera in the United Provinces during 1912, 1913 and 1914.*

			Cholera.	Plague.
1912	...	...	18,894	114,945
1913	...	...	60,427	107,683
1914	..	...	32,498	103,954

(b) *Statement showing the names of the first three districts in which plague and cholera were most prevalent, together with the total number of deaths in each case.*

	<i>Cholera.</i>		<i>Plague.</i>	
1912	Gonda ...	2,649	Ballia ..	21,465
	Kheri ...	2,645	Azamgarh ...	17,384
	Gorakhpur ...	1,729	Gorakhpur..	11,718
1913	Gorakhpur ...	12,509	Ballia ...	12,475
	Gonda ...	4,480	Azamgarh ...	10,468
	Bahraich ...	4,154	Gorakhpur...	9,858
1914	Gorakhpur...	5,227	Ballia ...	22,154
	Rae Bareli ...	2,715	Azamgarh ..	15,694
	Partabgarh...	2,076	Gorakhpur...	12,865

The Hon'ble Khwaja Ghulam-us-Saqlain asked (a) if Government are aware that milk and *ghee* (clarified butter) sold in the various bazaars of the towns and cities are mostly adulterated and injurious to health, (b) if Government would be pleased to enquire of the municipalities or health officers of the eight chief municipalities that return members to the Legislative Council, and of the municipalities in the head quarters of the districts, how many cases were started against adulterators of edible things and how many convictions were secured, and (3) what average punishment was meted out to such offenders by the court.

The Hon'ble Mr. O'Donnell replied :—

“(a) The Government is aware that the milk and *ghee* sold in the bazaars are frequently adulterated. In general the adulterants of *ghee* are not injurious to health, but are cheap fats and oils used to defraud the buyer. The adulterant to milk is mainly water, which, if obtained from a protected source, is not injurious to health.

“(b) During the year 1914, 22 prosecutions under the Prevention of Adulteration Act were carried through in the Allahabad and Lucknow municipalities. Twenty-one persons

were convicted and punished. In Cawnpore, Bareilly, and Benares there appear to have been no prosecutions under the Prevention of Adulteration Act. Offences under sections 272 and 273, Indian Penal Code, receive no separate notice in the High Court's returns, and therefore information regarding the number of convictions under those sections is not available and could not be obtained without an amount of labour disproportionate to the value.

“(c) In Allahabad and Lucknow the fines inflicted ranged from Rs. 75 to Rs. 5. The average fine works out at between Rs. 44 and 45.”

[Bengal.]

The Hon'ble Nawab Saiyid Hussain Haidar Chaudhuri, Khan Bahadur, asked :—

(a) Are the Government aware of the fact that cholera and small-pox broke out lately in a virulent form in and about the town of Comilla?

(b) What was the cause of these epidemics?

(c) Will the Government be pleased to state what steps (if any) they are taking to check the periodical return of these epidemics?

(d) Are the Government considering the desirability of introducing the Drainage Scheme in the Comilla Municipality?

Government replied :—

(a) There have been limited outbreaks both of small-pox and cholera in and around Comilla this year. Reports have been received of the following cases :—

Month.	SMALL-POX.		CHOLERA.	
	Cases.	Deaths.	Cases.	Deaths.
March ...	14	2	9	5
April ...	65	2	12	11
May ...	5	5	24	19
June ...	3	3*	Nil	Nil

*These three deaths occurred outside the town.

(b) Cholera is endemic in Eastern Bengal. Cholera outbreaks in the town of Comilla will not be checked until a proper water-supply is introduced.

Small-pox was imported from Calcutta.

(c) The Tippera District Board entertains four Medical Officers for the purpose of checking outbreaks of cholera. The Municipal Commissioners of Comilla are considering a water-supply project.

Fourteen vaccinators were appointed by the Municipality after the outbreak of small-pox, with the result that the epidemic was speedily reduced.

(d) The Municipal Commissioners are considering the desirability of introducing a drainage scheme in the Comilla Municipality. The scheme has not yet been submitted to Government.

The Hon'ble Babu Surendra Nath Banerji asked :—

(a) Will the Government be pleased to state whether it is a fact that in the recent Municipal elections at Barisal the Magistrate interfered with a view to influence the decision against Babu Kailash Chandra Sen?

(b) Is it not the case that the policy of Government is that there should be no official interference with popular elections, municipal or otherwise?

(c) Will the Government be pleased to state what action (if any) they are taking on the matter?

Government replied :—

(a) Mr. Strong, Magistrate of Bakarganj, wrote a private letter to the Manager of the Bauphal estate, expressing his opinion on the merits of Babu Kailash Chandra Sen as a Municipal Commissioner and suggesting that some other candidate should be put forward in his place.

(b) It is the policy of Government that there should be no official interference with popular elections, municipal or

otherwise, though no orders upon the subject have been issued at any time.

(c) Government have recently issued a circular inviting the attention of Government officers, Executive and Judicial, to the fact that the policy of Government is as has been stated in the reply to the second part of the Hon'ble Member's question, and in these circumstances they do not propose to take any further action in this matter.

The Hon'ble Babu Surendra Nath Banerji asked:—

(a) Will the Government be pleased to lay on the table a statement showing—

(i) the Municipalities in Bengal in which the elective system is in force, and

(ii) the Municipalities the members of which are wholly nominated by the Government?

(b) With reference to the recent Resolution of the Government of India on Local Self-Government, will the Government be pleased to state whether they are considering the desirability of extending the elective system to municipalities which do not now possess it, and if so, will they be pleased to mention the names of such municipalities?

The following reply was laid on the table:—

(a) A statement is laid on the table.* It will appear that out of 111 Municipalities in Bengal, there are only 15, the members of which are wholly nominated by Government.

(b) The recommendations of the Royal Commission upon Decentralization regarding the extension of the elective principle has always been kept in view. The elective system will be extended to those municipalities which do not at present enjoy the privilege as soon as this can be done without detriment to public interest. The matter is occupying the attention of Government.

* The statement is not reproduced.

Some Recent Publications.

MOTHERCRAFT. An advanced course of lectures delivered under the auspices of the National Association for the Prevention of Infant Mortality at the Royal Society of Medicine. Part II. Price 1s. 9d. net.

THE TUBERCULOSIS NURSE. Her function and her qualifications. By Ellen N. La Motte. Putman. Price 6s. net.

INFANT MORTALITY. By Hugh T. Ashby, M. D., Visiting Physician for Children to the Manchester Board of Guardians. Price 10s. 6d. net.

AMERICAN SEWERAGE PRACTICE.—Vol. II. The construction of sewers. By Metcalf and Eddy.

JUSTICE AND THE CHILD. By Douglas Pepler, Constable. Price 3s. 6d. net.

[Mr. Pepler writes with the object of enlisting voluntary help ; the general tone of the book is to depreciate an extension of officialism and state interference.]

LOWER LIVING COSTS IN CITIES. A Constructive Programme for Urban Efficiency. By Clyde Lyndon King, Ph. D. D. Appleton & Co. Price \$ 1.50.

A COURSE IN CITIZENSHIP. By Ella Lyman Cabot and others. Houghton, Mifflin Co., Boston.

THE TEACHING OF CIVICS. By Mabel Hill-Houghton, Mifflin Co., Boston.

A PRIMER OF CIVICS. Issued by the Colonial Dames of Illinois.

ANCIENT TOWN PLANNING. By F. Haverfield, Oxford. The Clarendon Press. Price 6s.

CITY LIFE AND ITS AMELIORATION. By George Sharp. Boston : Richard G. Badger. Price \$ 1.

HYGIENE FOR THE WORKER. By William H. Tolman, Ph. D., and Adelaide Wood Guthrie. New York: American Book Co. Price 50 Cents.

VALVES AND VALVE GEARS. By F. De Bonde Furman, E. E. Vol. I. Steam Engines and Steam Turbines (Second Edition). Chapman and Hall. Price 10s. 6d. net.

THE STRENGTH OF MATERIALS. A Text-book for Engineers and Architects with numerous illustrations and tables and worked examples. By Ewart S. Andrews. Chapman and Hall. Price 10s. 6d.

TRAMWAY TRACK CONSTRUCTION AND MAINTENANCE. By R. Bickerstaffe Holt, Highways and Permanent Way Engineer, City of Leeds.

THE HEALTH OF THE CHILD: A manual for mothers and nurses. By O. Hildesheinn, M. D., Methuen. Price 1s. net.

RURAL SANITATION IN THE TROPICS. By Malcolm Watson, M. D., with illustrations. John Murray.

RAILROADS, FINANCE AND ORGANIZATION. By William Z. Ripley.

Notes of Cases.

PAROL CONTRACT OF MUNICIPALITY.—A provision often found in Municipal Acts is to the effect that no contract made by a city official shall be deemed to be binding on the municipality unless executed in writing with certain prescribed formalities. The city of Wagoner, which has a provision to this effect in its charter, was sued by one McKiney on a parol contract alleged to have been entered into by one of the city commissioners and on which the city had acted for some time with the acquiescence of the other commissioners. The Oklahoma Supreme Court held (144 Pac. 1071) that acquiescence by the commissioners and partial performance of the contract could not be considered as waiving the statutory limitations

and that the contract, therefore, could not be considered binding on the city. Any other interpretation would have rendered nugatory this very salutary limitation on the city's contractual power and would have had possibilities of distressing complications.

Practical Points.

[The questions of subscribers only are answerable in the Gazette. The name and address of the subscribers must accompany each communication which must be legibly written.]

12. *Is a bicycle liable to be assessed by a Municipality?*

ANS. The answer to this question depends upon the wording of the several Municipal Acts. In Madras, for instance, the words used in the Act are "a vehicle with springs or without springs." There is no definition of the word 'vehicle.' It has been held by the Madras High Court that a bicycle is a vehicle with springs and as such it is liable to be assessed. See *Wilson v. Madras Municipality*, I. L. R. 19 Mad. 83. In the Bengal Municipal Act, the word "carriage" is used; and it is defined as follows:—"In this Act unless there be something repugnant in the subject or context, carriage means any *wheeled vehicle* with springs, used for conveyance of human beings, and ordinarily drawn by animals." In Schedule V attached to the Act, no mention is made of a bicycle. We are, however, of opinion that a bicycle would fall within the meaning of the Bengal Municipal Act. The definition of carriage begins with the words 'unless there be something repugnant in the subject or context.' There is no doubt that a bicycle is a wheeled vehicle with springs and that it is used for conveyance of human beings. The definition speaks of a vehicle *ordinarily* drawn by animals. This would by implication include other species of motive power. (The same remarks will apply to a motor cycle or a motor car).



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The Housing Problem in the Madras Presidency.

IN the July number of the *Local Self-Government Gazette*, we described the housing policy adopted in the countries of Europe and America. The lines of action taken were grouped under three heads:—(1) A land policy which aims at the creation of small holdings with homesteads, the holding of land by Municipalities, etc.; (2) Special taxation and fiscal exemptions, covering taxation in site-values, exemptions of improvements, etc., the object being to encourage the construction of houses for small people; (3) Financial aid, under which are comprised direct building by State or Municipal authorities and assistance to co-operative and other organisations engaged in building. We propose, in this article, to examine, how far conditions in this Presidency call for special regulations of this nature.

The outstanding fact in the history of this Presidency is the evolution of the raiyatwari system of land-holding. The broad result of this policy is the creation of a large body of peasant-proprietors settled on the land. The village, with its cultivated fields and its cluster of houses, is still the home of over 88 per cent. of the population of the Presidency. To these, generally speaking, the problem of congestion and scarcity of house-site is not of any great importance. Exceptional circumstances, however, prevail in some of the delta tracts in which irrigation has been carried to the very doors of houses and existing village-sites cannot accommodate the growing population. The Madras Government have recently taken up the question of extending village-sites in these tracts

and the result of the inquiry ordered will be eagerly awaited. Subject to this single exception, it may be stated that, in the rural areas, and even in the smaller towns, the housing problem is not urgent and does not call for special measures.

In the larger towns, however, the case is different. Take Madras, for example. Owing to the growth of industries and other causes, the population has been steadily increasing, though in the last decade, the rate of increase was lower than in the three previous decades. In portions of the city, the density of the population varies from 132 to 138 an acre. The death-rate is as high as 46·6 per mille. Infantile mortality was 294·1 in 1910-11, 305·4 in 1911-12, 293·4 in 1913 and 308·9 in 1914, in every 1,000 infants born alive in the year. This appalling waste of infant life is a very serious matter. The evil is, perhaps, partially ascribable to some social customs prevailing among the people. It cannot be denied, however, that overcrowding of dwellings with the resultant excessive density of population per acre is a very potent cause; and experience in other countries has shown that an improvement in the housing conditions of the middle and lower classes has reduced infant mortality rates considerably. Similar statistics can be easily given for other large towns, like, for example, Madura. The conclusion is that, in the large towns of the Presidency, the housing problem is of extreme importance and urgency and we propose to examine how far the measures found necessary in other countries are desirable in these places. We recognise, of course, that it is futile to attempt to introduce in our towns the elaborate building and other regulations in force in European countries. We submit, however, that the Municipal authorities and Government can do something towards providing the more provident members of the middle and lower classes of the population with cheap and wholesome sites and enabling them to build healthy houses. We are not guided strictly by the policy of *laissez faire* in such matters and the demand for action by the State and Municipal bodies needs no elaborate

justification. Important public interests are involved in the solution of the problem: land becomes exceedingly costly in towns owing to various causes: the cost of building is high; and the men to be helped are those who have no chance under unrestrained competition. The few suggestions that follow are made with diffidence: the subject is one on which differences of opinion are inevitable. No attempt is made to work out details and the general suggestions—all of them have, of course, been made before—are made with the object of arousing discussion on the various aspects of the question.

Most of our large towns have waste spaces within their limits or on their outskirts which, with proper administration, can be made available for extensions, when the need for them is felt. In Madras, for example, there are divisions in which the density of the population is very low. There are, again, paddy-fields which must, in course of time, be built upon. In the villages round the city, there are areas in which the overflow of the population can be settled, when necessary. The existing Municipal Acts do not give local bodies all the powers necessary for controlling these areas. Local town-planning Boards should be established in large towns which should have power, under the law, to conduct surveys of existing housing conditions, forecast future requirements and prepare plans for the development of cities—providing for the conservation of vacant spaces, the development of the areas in which building should be permitted, and the laying down of simple building regulations suited to each locality. These should be representative bodies guiding the extension of the cities along proper lines, must be in close touch with the Municipalities and represent all interests in the cities. We do not suggest the constitution of Improvement Trusts as in Calcutta and Bombay which have led to division of authority and frequent conflicts. What we aim at is the vesting of legal powers *in the Municipalities* so that committees thereof, strengthened by representatives of the interests concerned, may exercise the functions referred to above.

The next important point is the incidence of the expenditure incurred by Municipalities on "local" as opposed to general schemes of improvement. It frequently happens, in our Municipalities, that schemes benefiting a particular locality are executed at the expense of the community. The Corporation, for example, executes works which convert a swamp into good building site; or, broad roads and even cross and side-streets are laid out through a block of land which had formerly no access to the main thoroughfares. In these cases, the improvements enhance the value of the lands enormously; often, the aggregate enhancement in the values of the properties is several times the cost of the improvements themselves. Under present conditions, immediately a road is run through a hitherto inaccessible block, land-jobbing on a large scale commences. Owners find they are offered high prices for their properties. They sell to speculators, who resell at large profits and the cost of building-sites becomes prohibitive. It is also not uncommon for a few speculators to buy undeveloped land in towns in the expectation that a new road will be laid out by the Municipality through the property; and once this is done, land values are enhanced, and the professional land jobber comes into the field. It is only fair that, where the benefits of improvements inure not to the general good but to that of the owners of adjacent properties, these, and not the public, should pay for them. Considering how inadequate the resources of our Municipalities are, it is only by a fair distribution of the expenditure on improvements on this principle that money can be found for pressing public needs. The law should, therefore, empower Municipalities to recover a proportion of the cost of such local improvements from the owners benefited. Assessors should be appointed to settle the proportion to be made good by the land-owners and the share to be allotted on each holding. We are aware of the difficulties inherent in the "assessment of betterments"; but it must be possible, with the experience of other countries before us, to frame a scheme which would be just to all the interests affected.

The policy of acquiring lands with a view to control the land market and prevent speculation might also be adopted by our Municipalities. It would, for example, be advantageous if before undertaking schemes of development, our Councils would acquire blocks of undeveloped land at market value, improve them and sell them at cost price (after charging to them the entire cost of the improvements) to builders, or groups of them, subject to conditions that would ensure the construction of sanitary dwellings within a reasonable time. Similarly, suburban settlements may be encouraged by acquiring lands outside the Municipal limits, improving them and parcelling them out into building sites for *bona fide* residents.

By acquiring undeveloped lands within their limits, improving them and laying them out into house-sites; by pressing into the service of the community lands on the outskirts and encouraging the formation of properly-planned suburbs; and by checking speculation in sites so far as Municipal policy can do this, Municipalities can assist in making house-sites available to men of moderate means. This, however, does not solve the whole problem. There still remains a consideration of the facilities to be afforded for building. We do not advocate the policy of Government and Municipal building which is followed in the West. Again, the provision of sanitary houses on moderate rents is not likely, for many years to come, to attract private capitalists; this is not, of course, a matter for regret. What is necessary is that the class of people whom we have in view should be helped to own the houses in which they live. Building is very costly in the larger towns and, in our country, private capitalists will not lend either for long terms or on rates of interest which will enable the small owner to repay the interest and instalment on capital from his monthly income. This is the experience of the few co-operative building societies started in this Presidency. They raise loans at between 6 and 7½ per cent. Loans to members therefore bear interest ranging from 8 to 9 per cent. and, up till now, very few houses have been

constructed as a direct result of the activities of these societies. Government aid is thus a *sine qua non* and this must be afforded not to individual builders but to groups of them, joined together in co-operative building societies. This facilitates, from the Government point of view, the issue of loans and their collection ; while the members obtain the advantages of collective action—great economies in the purchase of materials and in actual construction, and social advantages such as the provision of common wells, gardens and open spaces. Again, sanitary and building regulations are more easily enforced through such societies than through Municipal subordinates. In European countries, co-operative societies, receiving aid from Government and Municipal authorities, have made it possible for thousands of small men to live in their own houses and this is certainly possible in India. It is only by actual experiment that the forms of building societies suited to our conditions can be determined ; but we have no doubt whatever that the building problem in our large societies can be solved only through the agency of such organisations. Our first step should, therefore, be to constitute a bureau of information and to bring together a body of enthusiastic and well-informed men to do the necessary propagandist work. In Bombay, the Co-operative Housing Association has addressed itself to this task—they have a collection of the best literature on the subject ; publish pamphlets ; arrange lectures to prepare the public mind ; and formulate schemes for starting societies in definite areas. We commend the example of Bombay to the co-operators in Madras and look forward to a time when co-operative building societies organised on right lines will take a large share in solving the housing problem in our large towns.



Improvement of Slums or Widening of Roads?

[By D. E. WACHA.]

FOR many months past an animated controversy has been going on at the Board of the Bombay City Improvement Trust as to the relative urgency of improving slums and widening roads. The problem of improvement of the slums is not of yesterday or to-day. It has been with us since the outbreak of the plague in its epidemic form—since 1897. The fundamental object which led in the following year to the passing of the Bombay City Improvement Trust Act was the entire stamping out of the plague of which the slums were the breeding ground. Unfortunately, the Act was hastily prepared and more hastily considered and passed by the Legislative Council in defiance of the many serious objections to several of its provisions, inclusive of those for the constitution of the Trust. There was a decided opinion in the Corporation itself when the Government invited its opinion on the draft bill of which only a cunningly devised abstract was furnished and in which there was at first a studious omission of the financing of the Trust. There was a respectable minority which looked wholly askance at the new-fangled enactment contemplated. It wholly objected to the constitution on the ground that the representatives of the Corporation were only four out of fourteen when in reality they should have been the governing majority in the fitness of things. The minority of great civic experience was of opinion that as elsewhere in the countries of the west, the improvement of insanitary areas in a populous city should be left to the Municipality. Urgency, however, was pleaded and a bare majority most half-heartedly agreed to the proposed measure in the earnest belief that the ill-considered and ill-digested proposal would be moulded to the satisfaction of the citizens in the Legislative Council. But, as usual, there was the official majority there which carried the day, though the

representatives of the Corporation and the independent non-official members did their level best to move many a reasonable amendment. Practically, therefore, the Bill was passed as an urgency measure and on the emphatic assurance of its sponsors, Lord Sandhurst and Sir Charles Ollivant, that the fundamental aim and object of the legislation was the *sanitary regeneration* of the city. Scores of pestilential areas were to be taken on hand by way of improvement schemes other than street schemes which were designed for improving or widening a street. But the Act had so enlarged the scope of the measure that the expansion of the city, greater facilities of communication, the widening and construction of roads, the housing of the working-classes, the finding of accommodation for the police force and the reclamation of a part of the Western bay were included therein. As a result, the Act is indeed unique in the whole civilized world. For, I am not aware of any Improvement Trust Act in the Western countries which embraces so many ambitious projects, all under the hollow plea of sanitary regeneration. Practically the Act is not only unwieldy and beyond the best efforts of a single organisation to accomplish the several objects to anything like the satisfaction of the public, but extremely defective in view of the successful accomplishment of the primary object. There were a few sagacious citizens in and out of the Corporation who had not the slightest doubt that the Trust would prove a comparative failure and withal a department of the Government instead of an independent civic organization. Bombay has by this time disagreeably realized that forecast.

However, the die was cast and on 1st November 1900 the Trust was brought into operation for better or for worse. Fifteen years have gone by but there have been exceedingly few indications, save here and there, of a sanitary regeneration of the city as its principal authors had emphatically assured. True it is that two pestilential slums have been swept away and in their place new sanitary areas have come into existence.

In Mandvi, only one spot, the Koliwada, has been improved, but the bulk of the area must still be considered the hotbed of disease and death. But from the very beginning ambitious street schemes, planned *in camera* long before the Act was passed, were immediately taken on hand. The Corporation was greatly disappointed that those schemes were given the principal attention while the improvement of the slums was only deemed secondary. That was a deliberate attempt to defeat the very object for which the Act was passed. The Chief Executive authority, again, was extremely hostile to every reasonable and legitimate suggestion of the Corporation. When information was asked it was not forthcoming. When eventually it had to be furnished it was most incomplete. In short, the Corporation was baulked at every step in order to prevent it from forming a well-considered opinion on the merits of the scheme. The utmost secrecy was observed. The proceedings of the Trustees were held with closed doors for months together. The representatives of the Press were refused admittance till public opinion had eventually succeeded in forcing the hands of the Trustees. Disgusted and wearied, the Corporation, some three years after the Trust had come into active existence, memorialised the Government. In a well-reasoned representation, which even to-day might be perused with profit and instruction, the Corporation pointed out how it was treated, how information was withheld under some hollow pretext or another and how all along the Trust had displayed an attitude the very reverse of friendly. Instead of heartily co-operating and listening to the voice of experience, the chief executive snapped his fingers and defied the Corporation. He resented all suggestions which were intended for the better accomplishment of the fundamental object and went on launching ambitious and costly schemes for new "arterial roads." On the other hand the Corporation pointed out to Government that at the initial stage it was wisdom to cause to be prepared a comprehensive plan of the diverse areas which needed improvement in the whole town and marking those urgent which needed to be taken on

hand at once. The advantage of proceeding on the line suggested was obvious. It was wisely pointed out that instead of dealing haphazardly with the various areas it would be most advisable to have a well thought out scheme showing how link after link in the chain of improvement could be added while urgent areas might be taken into hand in priority to others of less pressing need. But the Government of the day pigeonholed the petition, which was no credit either to its sense of responsibility or its capacity to apprehend the gravity of the situation. Two years later, the Municipal Commissioner, no other than the late Mr. Harvey, one of the few ideal Commissioners Bombay has had, drew up a strong representation under one of the provisions of the Act, pointing out a large number of slums which needed the urgent attention of the Trust and the expediency of dealing with them, observing at the same time that it was absolutely essential to give priority to the improvement of insanitary areas before schemes for making costly roads which could wait conveniently for some years. This important letter was suppressed by the then Chairman of the Trust for fully seven months! This fact was a clear indication of the direction in which the wind was blowing. With the silent connivance of the Government, the Improvement Trust went headlong into other large schemes regardless of the representations of the Municipality. The public were confirmed in their original apprehension that the Improvement Trust was not an independent body intent on following the suggestions made by the representatives of the city but a department pure and simple of the Government. It was growing self-evident that the Trust was created only to carry out the objects the Government had in view at the expense of the rate payers. Costly arterial roads were to be deliberately constructed to meet not the requirements of the city but the convenience of Government and such an interested body as the Port Trust. There are a few who go even further and aver that these wide roads are specially intended to be built to serve a secretly planned

military strategy and that the contribution of 50 lakhs given by the Government at the urgent solicitation of Lord Sydenham, who was a well-known "gunner," was to meet that strategical purpose. Whether that suspicion was ill-founded or well-founded, it is difficult to say.

Be that as it may, it is quite transparent even to the man in the street that the Improvement Trust has been slowly and steadily defeating the primary object for which it was created, and making the construction of new roads of 120 and 150 feet its first care. The demolition of the slums has been openly given the go-bye. It is now broadly declared *urbi et orbi* by the Chairman that it was a grave error to acquire slum property, demolish the insanitary premises embraced in them, and clear the ground for purposes of erecting thereon sound sanitary structures. This cry has been raised and is echoed in some quarters but does not find any reasoned supporters. It has simply been raised with the object of strengthening the present erroneous and extravagant policy of roads of extraordinary width. It was well known that that policy had exhausted all the available resources of the Trust. For some years to come it was tied down from doing aught more. The forecasts, illusory as they have all through been, were to the effect that only 16 lakhs were available, and therefore it was not possible to acquire insanitary slums, which might be allowed, therefore, to continue to be centres of disease and death! Having by their unwise policy, against which the Corporation has uniformly inveighed, committed themselves to schemes which had resulted only in the dead-lock, for years to come, of its financial resources, the Trust found itself in a quandary.

It was a piece of luck that it got a windfall of fifty lakhs from the Imperial Government during a year when that authority, by reason of a large surplus, was able to give to the Provincial Governments liberal grants on education and sanitation. To these fifty lakhs came to be shortly added the additional income derived from the development of the estates. Then, there was effected a saving by reason of some

financial adjustments through the machinery of legislation. Thus the resources which stood four years ago at 16 lakhs for the available future improvements swelled to 96 lakhs. But instead of wisely devoting them to the fundamental object of demolishing the slums, specially those of a crying character, the Chairman launched his favourite scheme of what is called north to south and east to west roads. Two large east to west roads had at the very outset been constructed which were purported to ventilate the areas embraced by their alignments. There was no reason or even any necessity for them; not a single citizen had called out for it. But it was arbitrarily resolved to construct a new eastern "avenue" through a very populous street where stood a large number of costly properties. Memonwada street was resolved to be enlarged as a street scheme. It was vehemently protested against by the residents who also memorialised the Government of Lord Sydenham. But that authority heeded not the well-reasoned voice of the memorialists. The Corporation itself was divided on the subject of this acquisition of the Memonwada road which was to cost over a crore! The scheme was only approved of by a narrow majority, chiefly consisting of officials and officialised members, after a very hot discussion in the municipal chamber. Of course, in the Improvement Trust Board, the scheme naturally passed, as it has a preponderating official majority; the only persons who opposed it were the representatives of the Corporation. Thus public opinion was flagrantly defied.

Emboldened by this success, the Chairman revised the scheme, laid aside for a time, of widening another already existing broad road from Pydhonie, near Sir Jamsetji Jeejeebhoy Hospital to Lalbag near Parel, by making it 100 ft. and from the last named place as far as the northern limit of the town to 120 feet. The only plea for widening this large trunk road, which is already 80 feet wide on an average, was that there would be extensive traffic along the existing route. Time should be taken by the forelock to acquire the properties

in land on the line of alignment lest owing to the endearment of land a few years hence it might become impossible to acquire it! All this plea has been discussed and demonstrated in the Corporation as purely imaginary or hypothetical. Indeed land is even now showing signs of depression. But arbitrary as the Trust is, and since the Government knowingly connives at such arbitrariness, there is no help. The citizens have been greatly discouraged, and so this ambitious enterprise of making avenues and arterial roads at immense cost is going on merrily. The Corporation's opinion having been invited on this latest scheme of widening and construction of roads to 120 feet, that body has submitted a well-reasoned out and elaborate case against it. It is now for the Government to sanction or veto the scheme. The objection on the part of the Corporation is that the Trust is proceeding absolutely on wrong lines and in flagrant defiance of the primary object for which it has been created. It is not averse to widening existing roads to a reasonable width and to constructing even new ones. But what it urges is that there is no hurry for it. That work should be subordinated to the primary necessity of improving the sanitary areas which have been deliberately allowed to be neglected for the last fifteen years. The plea is urged that the slums had better be left alone till the houses standing thereon which have been breeding grounds of death and disease, fall into decay by the efflux of time. Thus scores of such pestilential slums are allowed to remain as they are under the present policy with the result that death claims in arithmetical proportion its annual holocaust of victims, and the Trust goes on merrily widening the roads meanwhile. An ingenious political economy is pleaded that very little money would have to be paid when the slums having come to rack and ruin might be purchased for a song. But it is forgotten by this new school of sanitary economists, who seem to surpass the Germans in the massacre of the innocents, that every life sanitarily saved from year to year is a most valuable asset and repays to

the city a thousandfold. To conclude; the conviction has grown in me and my colleagues who represent the Corporation at the Board of the Improvement Trust, that it is idle to expect anything like wholesome sanitary regeneration of the city so long as the Improvement Trust continues to be constituted as it has been for the last fifteen years. All the mischief that it has committed and all the evils that it has heaped on this unfortunate City, which has contributed up till now something like three quarters of a crore of rupees by annual contributions, have arisen from the single fact of the irresponsible majority which administers the Trust. Had there been, as was emphatically urged from the date of the inception of the Bill, a majority of the Corporation's representatives on the Board of the Trust—say eight instead of four—I have not the least doubt in my own mind that responding to the sanitary requirements of the city this majority would have shown to the world the valuable sanitary work they might have achieved by confining their principal attention to the demolition of many a pestilential slum and clearing the area for sanitary dwellings. The first and obvious duty of the public citizens of Bombay should be to agitate for sweeping away this miasmatic constitution itself and replacing it by a sound and sane one which would really regenerate Bombay.

Taluk Boards in the Madras Presidency.

IN the matter of Local Self-Government, the Madras Presidency is, in some respects, well in advance of other Provinces in India. Under each District Board, there are several sub-district boards, called Taluk Boards, which are entrusted with the detailed administration of roads, schools, dispensaries, markets, etc., in their jurisdiction. When any village rises into importance or grows very rapidly, the taluk board generally enfranchises it by making it into a union and leaving its affairs to be managed by a small Committee of its residents. In other words, the aim has always been to entrust the conduct of local affairs as far as possible to local men.

But it has frequently been a matter of complaint that in actual practice these local boards—both district and taluk boards—are too much officialised, that they seldom reflect the views or express the needs of the people, but are merely the agents to record the wills or, it may be, the whims of the presiding official, such as the Collector of the district or his Assistant. A body of opinion has grown in recent years, emphasising this view and insisting that no further progress can be made in the direction of local self-government, unless the influence of the revenue official presiding over these bodies is diminished or altogether eliminated. An extreme view would resent even the well-meant advice or comments of revenue divisional officers on matters pertaining to local boards and municipal councils; but the more moderate body of advanced opinion would restrict the interference of local officials to a minimum consistent with good administration. It was apparently with a view to bring about this reform in local self-government that a resolution was moved in the year 1911 in the Madras Legislative Council recommending the election of non-official presidents to one or two taluk boards in each district.

The resolution was accepted by the Madras Government in a modified form; and three taluk boards were, as an experimental measure, given the right of electing their own presidents. About the same time it was evidently urged that, if the Government were prepared to undertake this bold experiment of handing over a few boards to elected presidents, they could advance more fearlessly in the direction of nominating non-officials as presidents. The results of an election may depend on the caprice of an electorate which may not always be quite well informed. But there can be no such risk in the Government choosing their own candidate from among the prominent residents of a locality and entrusting him with the task of administration of a taluk board. This view seems to have found favour with the Government, for we find that in August 1912, within a few months of inaugurating the

experiment of elected non-official presidents, the Government selected nine other taluk boards to which non-official gentlemen were nominated as presidents. The experiment was successful enough to justify a still further advance in 1914, when eleven more taluk boards were given over to non-official presidents. And we find from the reply given by the Government to the Hon. Mr. B. V. Narasimha Ayyar's interpellation at the meeting of the Legislative Council held in February last, that they are likely to extend the system to other taluk boards. That this policy of the Government meets a popular demand is evident from the fact that everywhere articulate public opinion demands an extension of the same experiment to district boards also and is not satisfied with the very rapid progress made by the Government in the case of taluk boards.

It does not, however, appear that the question whether this is a move in the right direction has been seriously discussed by our public men. In the case of municipal institutions, it is now taken more or less as an axiomatic proposition that progress lies in the direction of appointing non-official whole-time chairmen by election of the councillors. It is, therefore, thought that in the case of local boards also the same proposition holds true. The executive charge of the municipal affairs of a town is a responsible position and is calculated to give invaluable training to the non-official who aspires to serve the public or to rise as a promising politician. The opportunities for such training will certainly be widened by throwing open the presidentship of rural boards also to such men. And, besides, there is the vague feeling behind that the essence of self-government consists in the Government of local affairs by the people and for the people and that it should not be left to the agents of a close bureaucracy.

We have no intention to belittle this line of reasoning. But it is clear that it overlooks certain essential facts. In the first place, the jurisdiction of a rural board is vastly different in character from that of a municipal town and much more

extensive in area. The duties of the president, as those of the municipal chairman, are multifarious. He has to inspect and maintain existing roads, hospitals, dispensaries, schools, markets, ferries, cartstands etc., to enquire and see where they have to be newly opened, to inspect villages in order to improve their sanitation, water-supply, and other amenities of social life, and on him depends in a large measure the steps taken to prevent or check the spread of epidemics like cholera, small-pox and plague. All this can be personally supervised in a compact and small area such as that of an ordinary municipal town by any one who can spare a few hours every day from his daily avocation. But when one has to range over a whole taluk or a division of a district, it takes one days and days which have to be taken out of one's ordinary work. Men who have the necessary amount of leisure and inclination to tour about the taluk are not easily found ; the busier and younger men cannot leave their work for long ; the older, such as retired officials or members of the bar who have gone out of active practice, cannot command the necessary energy. That this is not an exaggeration is clear from actual experience. We remember how a distinguished vakil recently resigned his position as the president of a taluk board for the simple reason that he could not tour about, and how he was constrained to say that he could not find any other person competent to succeed him. In other places too, we know of non-official presidents who have failed to do even the somewhat low minimum of touring prescribed by a considerate Government ; and if too much insistence is placed on such touring, we do not know whether we shall not be cutting short the supply of eligible men for the post.

Then there are other difficulties which are created by the existing law relating to the powers of these taluk boards. Almost every pie of their revenue is collected for them by the revenue agency, over whom they have no manner of control. Proposals for expenditure almost always depend on informa-

tion gathered from village officers and other subordinates of the revenue, educational or other departments, who are not bound in all cases to assist the president wholeheartedly. At present, the official president controls several of these people by virtue of his office; and in other cases, his influence and experience as an official are potent to get things done. It is unfair to put any non-official, however gifted and capable he may be, in this position and expect him to do as well as the trained official with his disciplinary powers, his influence and his prestige.

We do not here take count of the natural disinclination of a subordinate officer to take orders from a non-official. The difficulties are even otherwise serious enough and cannot be removed except by an alteration in law which would make the machinery of the local boards as separate as possible from other departments of Government, and would really duplicate the existing village and taluk staff and swallow all the available money which now goes to improve the condition of the villages. That these difficulties are now being felt increasingly is more or less clear to every one who is in the know. They were vaguely hinted at in the discussion which took place at a meeting of the District Board of Tanjore some time last year. They would surely come into more prominence as the present experiment is enlarged in scope, and it would perhaps not be wise to stereotype it as an approved method until some solution of these difficulties is discovered.

In view of these circumstances it may, perhaps, not be quite unprofitable to consider whether there are not other and more hopeful lines of advance. The training of individual non-officials in the art of running an office is after all not quite so important as giving opportunities to the people to decide what they want to be done and to get it done. The obvious thing is to leave the taluk boards every freedom to choose a policy or sanction a work and to entrust the execution of that policy or work to the trained bureaucracy which is ready to hand. At present, it is feared that the

revenue divisional officer, who is the chief executive officer of the taluk board, has also the most influential voice in shaping the decisions of the board; and the non-official members do not deem it prudent to vote against the convictions of the president. That is why proposals are made to rule out the revenue divisional officer from the taluk board. A safer and more conservative remedy will be to make use of his experience as far as possible but to minimize the influence of his personal views on the deliberations of that body.

Water Supplies to Rural and Small Urban Areas.

[BY WILLIAM C. SAVAGE, B.SC., M.D. (LOND.), D.P.H.,
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IN many ways the large urban areas have a simpler task in providing their inhabitants with a pure water supply than the rural and small urban communities. It is true that the former have not, as a rule, within their own boundaries the water they require, and have to go outside, and sometimes for long distances, for their supplies; but this difficulty is more than counterbalanced by their greater rateable value, while in particular when they do get the water to their boundaries their expenditure upon water mains and fittings is small in proportion to the income derived from water rents and other charges.

The fundamental difficulty in supplying a rural area with water is not usually in obtaining a pure supply in a conveniently accessible position, but is far more frequently the difficulty of reducing the cost, owing to the length of mains required, so that the charges upon the consumers shall not be prohibitive. Supplies to rural districts can for convenience be grouped under two headings: from shallow wells, usually with a few local springs, and piped supplies, usually from springs. A surface well derives

* From a paper read at a Provincial Sessional Meeting of the Royal Sanitary Institute at Yeovil.

its water from the superficial pervious strata. All sorts of contaminating materials, in the form of human and animal organic matter, gain access to the surface soil, and the bacteria which such materials contain may be washed through the soil with the rain water into the subsoil water which feeds the well. Whether such a well water receives harmful bacteria will depend upon a number of factors of which the following are the most important:—

(a) CHARACTER OF THE SOIL.—The loose, sandy soils are excellent germ filters, and by retaining the pathogenic bacteria in their interstices in an environment which is unfavourable to them and which ensures their destruction by the ordinary saprophytic soil bacteria, they exercise a markedly protecting influence. On the other hand the stiff soils, the marls, limestones, and chalk are apt to crack and form fissures, and so allow the passage of unpurified organic matter direct into the well water. Most of these soils, however, do not readily hold water, so that the typical surface well is dug in sandy or gravelly soil.

(b) THE GENERAL POLLUTION OF THE SOIL.—The filtration properties of soil just mentioned obviously involve a struggle between the invading foreign bacteria and the power of the soil bacteria and other soil activities (chemical, etc.) to deal with them. Given a very heavy or particularly a continuous pollution and the struggle may incline to the invading bacteria, who will establish themselves and become a source of continuous pollution of the water. The soil becomes so permeated with organic matter that it is no longer capable of efficiently acting as a germ filter. Except for wells in the midst of crowded populations I am very doubtful how far this is a factor of practical and material importance.

(c) THE AMOUNT OF RAINFALL.—Experiments with readily recognisable organisms have shown that given enough washing, bacilli can be driven a long way through porous soils. Very heavy rainfall will wash bacteria through soil to considerable distances, and I have come across a number of surface wells which only show bacterial contamination after heavy rain.

(d) EXTENT OF SUCTION EXERCISED ON THE WATER.—A well drains an area round in the shape of an inverted cone, and obviously the more prolonged the pumping the greater the area drained.

(e) NEARNESS OF THE SOURCES OF POLLUTION.—The nearer the pollution the shorter the distance the polluting bacteria will have to pass through the soil, and the greater the likelihood of their gaining access to the water.

(f) THE LEVEL OF THE SUBSOIL WATER.—When this or considerable parts of it are near the surface it is obvious that harmful bacteria are likely to be gaining access over a wide area, due to an insufficient depth of soil filtration. In such cases the whole of the subsoil water must be considered polluted or liable to pollution. This is particularly likely to occur in districts subject to flooding.

From these facts it is evident that two distinct sources of pollution have to be guarded against ; one the local contamination of the specific surface well, and the other the general contamination of the subsoil water. I have made myself, or have had carried out under my directions, many hundreds of bacteriological and chemical analyses of surface wells, and except in areas liable to flooding I have very rarely found in ordinary rural areas that the subsoil water is contaminated generally. This is readily ascertained by comparing the analyses of, say, ten to twenty surface wells from the same village. It is rare, indeed, to find they are all bad, although topographical investigation shows that they have a common or at least an intercommunicating subsoil water. This is a matter of the utmost importance, since it shows that if the average shallow well is so constructed and protected that organic matter falling in its vicinity, even on what may be spoken of as its collecting area, has to filter through a sufficient depth of soil, all the harmful bacteria will be filtered out and the supply be reasonably safe.

From my experience I consider that if all surface wells were properly lined and made impervious to water for a depth of at least twelve feet, and were covered in to prevent pollution through the mouths of the wells, this would furnish a protection to the water quite sufficient for most country villages, unless the soil was very unsuitable for filtration purposes, an unlikely contingency. The general practice in rural districts is that the builder of the new cottage digs his surface well absolutely uncontrolled as to its position or structure. Very rarely indeed is a protecting area reserved round the well, nor for ordinary cottages will the well ever be found to be made impervious inside. Its position is often such that the contamination of its subsoil water is invited.

The above considerations have only dealt with the quality of the water from surface wells. The quantity is also of importance, and markedly limits the suitability of this source of supply. The question of availability of water does not, in my opinion, receive anything like the consideration it merits and this applies to piped as well as to well supplies. The availability of abundant water is a great asset towards a healthy community, but the use of water is not encouraged when it has to be laboriously drawn up 40 ft. or so from a well, or, a not infrequent occurrence, the cottager has to go 200 yards or more to fetch it. With a piped supply the stand-pipes are sometimes much too far apart.

My rather extensive experience of these matters makes it evident that much misunderstanding in regard to the functions of water analyses prevails not only amongst the general public, but also amongst public health officials. One common and widely held error is that single water analysis, unfortified by local investigation, will enable an opinion to be given as to whether a supply is a pure one and fit for drinking purposes. Fairly frequently when from the county laboratory we have sent the results of a bacteriological or chemical analysis with the remarks that the sample is satisfactory and shows no evidence of contamination, or that

it is unsatisfactory and shows slight, marked, etc., evidence of contamination, we are asked to reframe our reply, and state in plain language whether the water is good or bad, and fit or unfit for drinking purposes. Such a request shows an attitude which totally misunderstands the object of the bacteriological and chemical analyses of water samples.

I am sometimes confronted with analyses in which opinions are stated in this way, and an opinion given from the examination of a single sample of water that the supply is a pure and wholesome one and fit for dietetic use, and am asked why I cannot give the same definite opinion. I have no hesitation in saying that opinions given in this form as to the purity of the water supply from a single sample reflect the gravest discredit upon those who make them, showing as they do, either absolute ignorance or wilful disregard of the limitations of water analysis. Water analyses only enable an opinion to be formed as to the condition of the water sample submitted, and do not justify an opinion which covers the future purity of the supply. When a repeated series of satisfactory results under different conditions have been obtained, these form valuable evidence as to the probable freedom of the supply from risk of contamination, while, when the results of an analysis are definitely bad, even a single one may justify the contamination of the supply as it exists, since once contaminated it is probable the supply is always liable to contamination unless the source of pollution can be removed.

District Boards and Railway Enterprise.

THREE important resolutions have recently been passed by three District Boards in the Madras Presidency in respect of the construction of branch lines, which is fast forming a feature of District Board enterprise in this Province. The first of them, passed on the 12th July last, is by the District Board of Coimbatore in regard to the construction of the Dindigul-Palghat Railway line, including the Podanur-Pollachi section. The next two are those passed by the

Tinnevely District Board on the 31st August last and by the Raminad District Board on the 4th September. In regard to the resolution of the Coimbatore District Board, the facts may briefly be stated. The Coimbatore District Board has already under construction a branch line from Podanur to Pollachi which is financed by the proceeds of its railway cess and a loan from the Bank of Madras. Proposals were made by Messrs. Binny & Co., Ltd., in 1914 for the construction of a line from Dindigul to Palni and thence to Pollachi, and, eventually, after correspondence and discussion with the Madras Government and the Coimbatore District Board, an application was made by Messrs. Binny & Co., Ltd., for constructing the whole of the line, from Podanur to Dindigul which would include taking over by the applicants of the Podanur-Pollachi line, projected and constructed by the Coimbatore District Board, on the basis of the District Board becoming shareholders to the extent of the capital involved in their own project—to the Railway Board through the Government of Madras which recommended the same. Controversy however, arose over the justice and propriety of handing over the construction of this line to a private company and objection was taken to the District Board of Coimbatore merging its own enterprise in that of the private firm. Both the District Boards of Madura and Coimbatore later passed resolutions asking that arrangements might be made for getting the whole line constructed as a joint District Board enterprise. The Government, however, have expressed their unwillingness to withdraw their recommendation in favour of the original application of Messrs. Binny & Co., Ltd., and the latter, in the meantime, on the 14th April last, reminded the Coimbatore District Board of the draft agreements sent to them last year. The result of it all was that this Board at its meeting held on 12th July last, passed the resolution above referred to, which is in the following terms:—

The Board has no wish to withdraw from its agreement with Messrs. Binny & Co., Ltd. The Board desires, however, to put it on record that it had no information of the rate which Messrs. Binny

& Co., Ltd., proposed to charge for floating the company when it passed its resolution No. 356, dated 28th March 1914, in which it consented to accept a commission of 2% on the capital subscribed by it. In view of the fact that the Board is subscribing 23 lakhs out of a capital of 80 lakhs and that the charges for flotation are put at 6%, the Board is strongly of opinion that it is entitled to better terms in this respect, and with this expression of opinion is prepared to leave its interests in this respect in the hands of the Government.

2. On the assumption that the Railway Board will grant Messrs. Binny & Co., Ltd., the concession to float a company for the construction of the Dindigul-Palghat railway, the District Board approves of the four draft agreements sent by Messrs. Binny & Co., Ltd., with their letter of July 30th 1914 and agrees to execute the first two of them subject to the orders to be passed by the Government with reference to paragraph 1 of this resolution.

It is difficult to think that the Coimbatore District Board could have acted in this matter with an unfettered discretion. The question raised by the Board in respect of the flotation charges is an important one, and, assuming that the Board has been asked to stick to its original agreement, the fact that this charge was not brought to the notice of the Board originally is a material circumstance entitling them to reconsider the whole matter. Regarding their participation in Messrs. Binny & Co.'s project itself, it will be seen that the resolution itself is passed on the assumption that the Railway Board will grant that company the commission to float a company for the construction of the Dindigul and Palghat railway but it has to be remembered that the grant of any concession to Messrs. Binny & Co. is itself, to some extent, governed by the fact that the Coimbatore District Board will have to take up shares to an equivalent value of the project now under construction by them as well as by the fact that the Madura District Board has already objected to the grant of any concession to a private firm to construct the Dindigul-Palni branch line and has declared its willingness to undertake it if it is not concluded by the recommendation which the Madras

Government has already made on behalf of Messrs. Binny & Co. The question therefore has to be decided by the Railway Board entirely on its merits and upon the general policy laid down for the construction of branch railways preferentially by District Boards.

The resolution of the Ramnad and Tinnevely District Boards in this view become important as indicating this general policy. The Ramnad District Board originally had a scheme for the construction of a line from Ramnad to Virudupatti while the Tinnevely District Board had before them a scheme for the construction of a line from Virudupatti to Tenkasi. When the Ramnad-Virudupatti line scheme came before the former Board in May last, that Board expressed its inability to finance the line and expressed itself in favour of the grant of a concession to the Bombay Company for its construction, but the Government have since addressed them again and asked them whether they would not undertake the construction of it themselves jointly with the Tinnevely District Board who could undertake the Virudupatti-Tenkasi section. Both these lines on completion are expected to pay handsomely the enterprise which might be shown by the Boards. The Tinnevely District Board has since passed an altered resolution and the Ramnad Board have passed a similar resolution both of which are as follows:—

That the Board should ask the Government to ascertain from the Bank of Madras whether it would be prepared to advance to this Board the amount required to construct the Ramnad-Tenkasi line or any portion of it within the jurisdiction of this Board. If the Ramnad District Board was agreeable, the two District Boards would jointly construct the line or else this Board would contribute cost of constructing the line within the limits of this district on condition that they would be made joint proprietors to that extent with others in any company that might be formed to construct the proposed railway.

Audit Control in Local Finance.*

[By B. SREENIVASIENGAR, B.A., B.L., ASST.
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SEVERAL minds are now thinking on the subject of the advance of Local Self-Government. It has been the expressed intention of Government in this Province, and in British India as well, that the spirit of Local Self-Government should be fostered, that people should be advised to take a good deal of interest in the management of local affairs, and that due facilities should be offered in that connection.

Non-official Presidents and Vice-Presidents are being appointed in Mysore to conduct the affairs of local bodies and the work of these bodies in their various departments is being arranged to be supervised by responsible committees. In short, a large amount of activity is being exhibited in all directions tending to the advance of local self-government. An important resolution was recently passed in April 1915 by the Government of India laying down its policy in the matter of Local Self-Government.

In accordance with the wishes of the local bodies it is proposed to grant them in Mysore, as in British India, more ample control than at present over their budgets and freer powers of re-appropriation, to concede to them increased authority on establishments and to relax existing restrictions in regard to outside sanction for expenditure on works of importance. But very strangely as it may look, the administrators of these bodies in Mysore would at the same time seem to rest satisfied in allowing the audit of the accounts of their funds in the hands of Government and to be in leading strings, so to say, in that respect. This state of things may be attributed to various causes. The local bodies here are too poor to provide for the expenses of an efficient audit and the

* A paper read before the Local Boards and Municipal Conference, Mysore.

members thereof do not apparently appear to be keenly alive to their responsibilities in the matter of themselves securing an effective audit of their accounts. I have therefore thought this a fit opportunity to offer a few suggestions in this matter for your consideration.

It is unnecessary for me to define the terms "Local Finance" or "Audit." Broadly speaking, in local finance as distinguished from general finance, the income of local bodies is generally regulated by statute, expenditure is limited to income and the money realised is required to be spent on certain well-defined objects. Special trusts are also created and receipts derived from certain sources should be appropriated only for the purposes for which such revenue is received. The sources of revenue that may be realised by taxation being limited, local bodies will have to bear in mind the possibility of supplementing taxation by development of property to meet their growing demands and by maintaining the principle that special services such as the supply of water, electric lighting, etc., should as far as possible pay for themselves. Hence the auditor of Local Fund expenditure should look to the legal as well as the financial side and to "surcharge" or place under objection all expenditure not warranted by the statutes constituting the local bodies. And the local tax-payer has certain powers and privileges given to him by law enabling him to proceed against the local body for serious misapplication of its funds. The law prescribes that the accounts and budget of local bodies should be published and made available for public inspection. It is therefore very necessary that adequate arrangements should be made by local bodies themselves for an efficient and prompt audit of their accounts and for the due publication of the same in the prescribed forms.

The Municipal Regulation of 1906 under which the important municipalities in Mysore are being constituted, enjoins on the Municipal Council to provide for a thorough audit of their accounts at least once a year and the Govern-

ment have also reserved powers to appoint in their discretion a Government auditor. In the Local Board Regulation provision is made for the audit of the District Fund accounts by a Government auditor, but at the same time an internal and prompt audit of the accounts is required to be conducted by a Sub-Committee of the Board called the "Finance Committee." The Municipal Councils and District Boards have in their periodical meetings to see whether the accounts have been duly audited and formally pass the accounts for publication according to law. Till very lately, in Mysore the audit of Municipal and Local Fund expenditure was being conducted, like all Government expenditure, by the audit officers of Government in the central office of accounts and local bodies were being treated as more or less so many Government Departments with varying powers of control over their funds. This system which may be not inaptly termed "the bureaucratic system" and was found defective in various ways, is now replaced by a local audit conducted annually by peripatetic officers of Government whose audit is expected to be more or less a technical audit conducted with a view to detect important irregularities and defects in administration and to advise local bodies on general principles of accounts. This is not the place to discuss the merits or drawbacks of the local audit system. Suffice it to say that that system has been admitted to have had beneficial results in bringing to light many irregularities and shortcomings in the accounts of local bodies. (Vide Government of India resolution referred to above.) But this audit by Government agency, also, has certain inherent defects. For instance, the Government auditor placing under objection a payment finally charged, when he finds that there is no proper payee's receipt, is not ordinarily required to make the necessary departmental enquiry as to whether the amount drawn has or has not actually been disbursed to the proper person, and why a receipt is not forthcoming, nor has he always sufficient time and facility to do so. Then again the visits of the Government auditor cannot be made more frequent than at present unless

Government are prepared to largely increase the audit staff deputed for this work, and it is for the local bodies to bear this in mind and make necessary arrangements for an efficient monthly audit of their accounts by devising a system of internal audit or by a continuous or concurrent audit of its accounts by elective auditors.

In this connection it may be observed that the procedure that is obtaining in Mysore and in British India as well, is in strange contrast with what prevails in England where a system of local autonomy had developed to such an extent that the right of national inspection and the external audit of Local Fund accounts was secured by Government only gradually by adopting what is called the "Grant-in aid System," *i.e.*, by giving subventions to local bodies because it was found that local authorities would be the better for an entirely independent audit of their accounts and that they would be more careful of the Government auditors' audit than that conducted by their own agency. But the local bodies here require to be told not of the advantages of having their accounts subjected periodically to the audit of Government officers but of the necessity and the desirability of themselves arranging for an efficient and prompt audit of their accounts by their own staff or elective auditors without waiting for the leisurely examination by Government agency. It is a matter for regret to have to observe that at present the Government auditor taking up the audit of the accounts of a Municipal Council or District Board sometimes after the expiry of the period to which they relate, often finds that the accounts are quite in arrears, that they are not maintained in the standard forms and that he has to compile the accounts before subjecting them to his audit.

Audits are of two kinds, *viz.*, (1) continuous audit, and (2) completed audit. As its name implies, a continuous audit is conducted continuously during the period under review, while the completed audit is undertaken only after the accounts for the period which are required to be audited are completed. The advantages of a continuous audit are obvious. It is conducted just immediately after the occurrence of

the transactions ; errors are quickly detected and rectified, a detailed examination of the accounts is possible and lastly accounts are required to be written up to date and are not allowed to fall into arrears. This sort of audit can be conducted only by an audit staff appointed by the local bodies themselves or by auditors elected from among its members or by professional auditors appointed by the local bodies at their expense. It is impossible for Government to arrange to place an audit staff at the disposal of each local body to undertake a continuous audit of its accounts.

On the other hand a continuous audit has certain defects which can be remedied only by having the audit after the accounts of the period are completely made up.

(a) The possibility of figures being altered or manipulated after check is a point to be considered by the auditor in deciding what parts of the audit shall not be conducted till after the accounts of the period under review are completely closed.

(b) A continuous audit will tend to be more or less mechanical, and there is the danger in the auditor losing the thread of his work if the audit is divided up into short visits throughout a year which would not be the case were the whole audit left to be taken up till after the books are closed.

(c) Lastly, questions involving general principles can be settled only after the accounts of a year are completely made up and reviewed.

It will thus be seen that an audit of either kind if considered by itself is inadequate to secure an efficient control of the administration of local funds and that in respect of any local body whose accounts are of any magnitude, the audit to be efficient, must be what may be termed the "ideal audit," *i.e.*, one combining both the continuous and completed kinds of audit. For as already stated the Government audit alone which can at best be conducted once

every year or half-year, *i.e.*, many months after the accounts have been closed and which in the nature of things pays greater attention to the legal rather than the financial side cannot be quite as prompt and thorough as one would wish, while it is the greatest possible mistake for a local body to commit if it should rest with folded hands waiting for the arrival of the Government auditor to discover errors, whether of commission or of omission, whether of merely wrong postings or more serious ones, or to point out possible ways of leakages of revenue or peculation by its subordinates.

Bearing in mind that the local bodies in Mysore are too poor to provide for the entire cost of an efficient audit of their accounts, it remains to be considered how best the "ideal" audit can be arranged and the advantages of both the internal and external audit of its accounts can be secured as far as possible with the minimum of cost.

Suggestions.

In the first place the duties of the various officers of the local bodies should be so arranged to be performed as to ensure an efficient check upon the accounts of the transactions for which they are responsible. Whenever practicable, an officer responsible for or directly interested in any branch of the administration should not control the final accounts thereof and an officer who collects or disburses money should not be allowed to keep the accounts on which the cash transactions are based. Conversely, officers entrusted with the supervision of the finance and the accounts should have no part in the administration or in the receipt and payment of money. In short, there should be such an automatic arrangement of the duties of the book-keeping and accounting staff and the cashiers as will of itself tend to prevent fraud. The principles upon which every system of internal check should be based are:—

(a) that for each transaction two or more persons should be made responsible, thereby rendering fraud only possible by collusion ;

(b) the duties of such persons should be carefully varied so as to prevent the possibility of collusion ;

(c) every account should be examined by some one other than the writer of it ; and lastly,

(d) a systematic supervision of accounts, once a month or oftener, by some one unconnected with the actual maintenance or checking of accounts should be arranged.

Next should come the internal or continuous audit, *i.e.*,—

(a) The audit as distinguished from the checking of accounts above referred to, which is to be performed by auditors specially appointed by the local bodies to audit all transactions within a few days of their occurrence. This detailed examination of the accounts can best be arranged by appointing audit clerks to work under the control of the Finance Committee to whom they should report the result of their investigations. Such an arrangement will remove some of the defects now existing in the audit of the accounts by the Finance Committee. For, the elected auditors are chosen not often on the standpoint of ability to discharge the duties of this important office in a full and complete manner.

(b) Members of Finance Committees are often unacquainted with accounts, and so the work is neither satisfactory nor properly done.

(c) For want of sufficient time their examination often consists in a mere checking of accounts here and there.

(d) And the passing of accounts by the Finance Committee is often more or less a formal affair.

A decided step forward in the direction of remedying this state of things is being taken. Finance Committees are now being reconstituted by all local bodies having incomes of some magnitude and their functions are being clearly defined.

In addition to the appointment of an audit clerk to help the Finance Committee in the detailed examination of the accounts a set of audit and account rules describing the several

processes of audit checks that should be exercised by the Finance Committee may be framed, and the account officer of Government may be occasionally associated with the members of the Finance Committee in their audits.

Some general instructions regarding the audit by members of the Finance Committee are given in Local Board Rules and Municipal Accounts Manual, and these instructions require to be supplemented by drawing up a set of questions to be answered by the members of the committee in auditing the accounts of local bodies. The local audit officers will, I dare say, if requisitioned, help the local body in preparing the necessary set of questions. In so doing they should, however, bear in mind that the audit check which may be perfectly clear to the technical audit officers of the Government, dealing as they are with these matters every day, may be difficult for the members of the Finance Committee to follow and that the process of audit required to be gone through by the members of that committee should be simple and clear.

All the above mentioned checks and processes of audit constitute only what is termed the continuous audit, and conducted, as they are, either by the staff of the local bodies or by persons unacquainted with the technicalities of accounts and audit, they generally require to be supplemented by a completed or technical audit, and this sort of audit should be performed either by professional auditors specially trained in that branch or by the audit officers of Government.

Under the Municipal Regulation of 1906, the Municipal Councils may appoint professional auditors to audit their accounts on payment of remuneration, but even in British India such an arrangement does not appear to have been adopted by any Municipality. As, for obvious reasons, an independent audit and inspection by the audit officers of Government is necessary and desirable and the local bodies are generally unable to pay the fee required to be paid to professional auditors, the question of appointing them does

not now arise; at any rate, so long as Government do not propose to charge any audit fee for the work conducted by their officers.

This audit is now arranged to be done locally at the offices of the local bodies by peripatetic officers of Government, one of whose duties will consist in seeing whether the necessary arrangements have been made for an internal check and a continuous audit of their accounts, whether the check so exercised is effective and whether the audit by the members of the Finance Committee has been prompt and on right lines. The Government officers will, besides supplying the technical rules of audit and subjecting the accounts to test check, bring to bear on their work the experience they have gained in seeing the working of different local bodies, point out the defects and loopholes existing in the system of accounts as at present maintained, and help in standardising the forms and accounts for easy publication.

These checks and audits above described do overlap to some extent and the local bodies in Mysore may not afford to adopt all of them. But it is necessary that in all Municipalities and District Boards, whether of large or small income, adequate arrangements should be made to secure some sort of an "ideal" audit by providing for a satisfactory internal check or audit of its accounts at least once a month pending the arrival of the Government auditor.

I wish to conclude this short paper with the fervent hope that the responsible administrators of local funds will devote due attention to this subject of securing an effective audit control in their hands and will thus instil in the minds of the local tax payer and of the Government, in whom should rest the final responsibility of watching against the malversation of local funds, that confidence which arises from the conviction that the trust is being properly administered and that the accounts are kept right.

Water Waste Detection in Rangoon and Bombay.

WE are much indebted to the authorities concerned for the interesting reports regarding waste detection, the importance of which was so clearly emphasised in a previous issue of the *Local Self-Government Gazette* by Mr. J. W. Madeley, M.A., M.I.C.E., Special Engineer to the Corporation of Madras. We shall deal with only the main features in the two reports.

In Rangoon, a special department for waste detection was created about the middle of 1913, and the report under reference embodies the results of the working of the department up to 31st December 1914. The staff employed consisted, in addition to fitters and turnocks, of 1 Waste Inspector and an average of 18 Sub-Inspectors. The Meters used were the Kent meters. The number of blocks tested were six, the whole city being divided into twelve blocks, and the resultant saving effected was 10,67,000 gallons per diem. If the next six blocks are operated in the same efficient manner, the results should be very satisfactory indeed, and the department would then be self-supporting, and every other additional improvement in the distribution will then be a net gain.

In addition to waste detection, the department has also examined and tabulated the connections and fittings in houses supplied. The value of such a record cannot be over-estimated as it will greatly help to detect and reduce unauthorised work.

The following is the abstract of work done during the year.

No. of unauthorised extensions and connections				
exposed	...	...	...	150
No. of blocks tested	...	...	...	6
No. of inspections made	...	...	...	35,577
No. of warning notices served	...	...	...	5,050
No. of 24 hours' notices served	...	...	...	4,354
No. of houses, fittings of which are recorded	...	...	...	4,494
No. of stop cocks cleaned, etc.	...	...	...	2,412

We endorse the opinion of the Deputy Chief Engineer that the department is a good investment and agree that it should be retained permanently.

In Bombay, the enquiry into waste prevention resulted from the able report on the water supply to that city by Mr. W. Santo Crimp. Two measures for the prevention of waste were proposed, viz., (1) The supply of water by meter measurement, (2) the employment of a staff for detection and suppression of waste. Mr. Santo Crimp favoured the latter although holding that the former is more effective. It was not until 1903, two years after the report under reference, that Mr. Sherring was appointed Special Officer by the Corporation "to ascertain the leakage from the mains and reservoirs and all other waste except such as takes place after reaching the service pipes". This investigation over a period of six months included the test of about 40 miles of mains showing a leakage of nearly 1,700,000 gallons per diem. The defects which caused this leakage were (1) leaky sluice valves, (2) indifferent jointing, (3) leaky stop-cocks on house services (4) uncontrolled sewer flushing, (5) flushing tanks on private services, not being provided with controlling devices, and (6) waste at public fountains and cattle drinking troughs. The work was carried out in a most able and efficient manner and the Corporation of Bombay sanctioned the retention of Mr. Sherring for a period of two years to complete his investigations for the whole City, if possible, and submit his report and recommendations. We have not been furnished with this report, but we believe that, as in Rangoon, waste prevention has become a permanent feature of the water works administration, and that the Corporation are finding it a safe and paying investment.



Local Bodies and Old Age Pensions.

[By. V. R. A.]

THE Corporation of Calcutta have been recently considering the amendment of the rules relating to the Provident Fund established for the benefit of their employees. Till 1902 they were giving pensions but in that year the pensions scheme was abolished to all future entrants and a provident fund established in its stead. The fund has been worked on the lines of the funds maintained by the larger firms and the Railway Companies, the subscribers being retrenched in 5 per cent. of their salaries, the Corporation contributing an equal amount. The experience of the last 13 years have shown that the scheme does not provide an adequate allowance for old age and is inferior to a pension in this respect. For instance a clerk starting on Rs. 24 and retiring on Rs. 50 after 31 years service would have to his credit in the provident fund a sum of Rs. 2,200 which would fetch him an annuity of Rs.15-13-0 per month as against the Rs. 25 he would have earned as pension under the previous rules. The General Committee of the Calcutta Corporation have therefore resolved to raise the compulsory payment to $6\frac{1}{4}$ per cent., the Corporation contributing an equal amount. But even at this the scheme will not be as good as a pension. The employees put in a petition asking for the rate to be fixed at $8\frac{1}{3}$ per cent., but on account of the 'financially stringent condition' of the Corporation, this was refused.

The $8\frac{1}{3}$ per cent. that was asked for was quite fair. All the leading railways in India, including two state railways, have established funds at this rate besides giving a retiring gratuity. The additional expense involved was only Rs. 19,000 a year, which is not much for a Corporation whose annual revenues exceed a crore of rupees. And the contentment of their servants was worth having. One reason why the State in India is able to get its subordinate services filled by edu-

cated and capable men at ridiculously cheap rates of pay is the attractiveness to the Indian mind of a pension for old age. Local bodies which do not appeal to this feeling will find that they cannot easily get good men to fill their smaller posts.

The well-attested fact that comparatively speaking only a small percentage live long enough to enjoy their pensions for any appreciable time does not detract from the attractiveness of the pension to the new recruit. In this respect a good provident fund is superior to a pension. A man may die at the close of 30 years' service just as he is about to get a pension leaving his widow and children destitute. The family of a subscriber to a provident fund is much better off.

It is interesting to compare the way in which the principal municipalities in India treat their servants in the matter of making provision for old age. Calcutta has been already dealt with. Bombay gives pensions but levies a contribution of half an anna in the rupee on all salaries. Rangoon has a provident fund on a 10 per cent. basis for men on Rs. 200 and above and at 5 per cent. for men below, the Municipality contributing an amount equal to half the subscriptions. Lahore compels its servants to contribute at $6\frac{1}{4}$ per cent. to its fund, itself adding an equivalent amount. Madras with its pension paid wholly from Municipal funds apparently treats its servants best.

The Madras City Municipal Act provides for the Corporation establishing a provident fund. And it may encourage thrift if in addition to the pensions they grant the Corporation started a provident fund on the same lines as the Government's General Provident Fund. A definite percentage of an officer's salary would be retrenched and interest at 4 per cent. given. No contribution would of course be made as the employees already enjoy pensions. The only point for decision is whether contribution to the fund should be voluntary or compulsory. I would make it compulsory in the case of all new entrants.

The Calcutta Provident Fund rules call for criticism in two particulars. In the case of a man dismissed for misconduct the contributions he makes are returned to him *without* interest. It may be right to deprive such a man of his share of the Corporation's contribution but as the Fund has had use of his money he is clearly entitled to the interest it earned. The treatment of a man who voluntarily resigns or retires is also open to exception. Such a man is entitled only to his money plus interest, and it is left to the discretion of the General Committee to grant him or not his share of the Corporation's contributions with the exception that a man with 10 years' service or over must be given 50 per cent. of such contribution. I do not think a matter so important as this should be left to the discretion of anybody. Some Railway Companies have a rule by which for every year's service a man is entitled to 5 per cent. of the company's contribution, so that a man resigning at the end of 20 years' service gets the full contribution. Such a rule might well have been introduced.

It is a sound rule to put questions of pension and retiring allowance on a definite footing beyond the caprice of an individual or a committee. The indefeasibility of such an allowance is what gives it its peculiar attractiveness. In recent years even Government have worked the rule that a full pension is admissible only for approved service with uncertain results. The rule was always in the regulations but in practice was for a long time disregarded and I think rightly. I know of the case of a Tahsildar who retired after 30 years' service earning a pension of 112½ Rs. On account of "adverse remarks against his character" the amount was cut down to the round figure of Rs. 100. That is, 12½ Rs. a month represented the monetary value of the Tahsildar's character!

Notes on the Pitting of Night-Soil.

[By V. G. REDE, CHIEF OFFICER, NASIK MUNICIPALITY.]

THE night-soil has to be protected from being eaten by birds, animals, and from having eggs deposited in it by flies.

2. It should not be mixed with earth. This does not prevent the development of maggots, and the dilution lowers its manurial market value, giving it a poor reputation with cultivators.

3. Wherever possible, ground near a nullah should be chosen for pits for the sake of the under-drainage.

The latter course is best. There is the advantage in having the pits in stiff soil, as it will admit of their shapes being retained and they can be used over and over again.

4. In a heavy soil the pits should not be more than four feet deep, or the night-soil will not dry. Moreover, in any soil, the labour of excavation is greatly increased by greater depth.

5. The pits are conveniently made up to five feet broad. Beyond that, the labour of covering them in becomes considerable.

6. The pits may be of any length, as Municipal night-soil is so fluid, finding its level even in a pit 80 feet long. Thus the *length* of the pit can be determined by the amount of night-soil to be stored on a given day.

7. As night-soil carts cannot be conveniently backed over a pit, the depôt should be provided with a metal-trough, open at one end, to be laid under the cart. The valve should be opened slowly.

8. When the day's night-soil is all in the pit, a layer of a few inches of kutchra is lightly sprinkled on the top. The kutchra floats and constitutes the seal of the pit.

Flies are not found to be attached to pits so sealed.

9. During the next day or two, and sometimes even later, there will, in a long pit, be here and there little volcanic eruptions of gas and night-soil through the kutchra. The sweepers go round and patch these with a shovel full of kutchra.

10. As the night-soil dries, the level of the top of the pits sinks. This does not matter in the dry season and the pits should be left for the action of the sun. It is fatal to allow rain water to stand on them.

11. The earth originally excavated can be used to protect the sides of the pits from running rain water, and it is better to make this use of it than to let it lie about in irregular mounds and ridges.

12. It may be found convenient to use one large pit for several successive days' night-soil. If this is done each day's night soil is sealed with kutchra, and the next day's is allowed to run on to the top of it.

13. The contents of a pit may shrink so much in drying that there is room for a day's night-soil on the top. This should never be applied, however, to a pit whose contents have only half dried.

14. Unlike the systems for the immediate application of night-soil to the land, pitting can be carried on all the year round. The monsoon does not interfere with it, if the pits are dug several days ahead, a number of pits being dug at a time. It does not matter if these partly fill with water, this only means that the night-soil will be diluted and will shrink more than ordinarily.

15. A register of the pits should be kept, with columns for dates of filling and emptying, and for remarks. Each pit should have its number painted in white upon black on a

piece of metal fixed to a wooden peg to be fixed in the ground at the end of the pit away from the approach for the night-soil carts.

16. Night-soil is not ripened thoroughly much under a year, but a good deal depends upon the dryness at which it has been kept. The demand by cultivators for it begins in the cold weather and is at its height in the hot, ceasing in the rains.

17. A fairly even plot of ground large enough overlooking a deep nullah, and far away from the sources of drinking water supply should, if possible, be selected.

18. First of all, the ground should be well cleaned and levelled and pakka roads laid out.

19. The site for the pits to be laid out should be systematically marked with pegs on the ground. If there be sufficient space the dimension of a pit should not ordinarily exceed 12' length x 4' breadth x 3' depth. But for want of space larger pits (larger in length) can be made with success. All pits to be rectangular in shape and systematically dug out.

20. The night-soil carts coming on to the trenching ground should be carefully placed on the road a few feet apart from the edge of the trench and the soil led into the pits by means of a cylindrical funnel of iron, tin or any other metal sheets. This funnel should be so tied as to make it hang exactly below the lower out-let of the cart and in such a manner as to let no soil escape out of it and fall on the ground. If necessary corrugated iron sheets may be placed below the funnel to prevent any splashing.

The end of the funnel pipe should be made to run into the trench to an extent of at least a foot. The funnel should be washed and cleaned each time it is used.

21. If it can be so arranged, a number of carts in batches of 3 and more should be simultaneously emptied into the pit in use one after the other and the soil run into the pit should

be immediately covered with a thin layer of light kutchra, thus preventing the access of flies during the time the next batch of carts may take to reach the depôt. This process should be repeated at each of the successive emptying of carts and the pit finally closed with a thick layer of light kutchra of 3 to 5 inch thickness or more. No earth should be used at any time in closing the pits or covering the successive layers.

22. During the process of evaporation the stuff below the kutchra begins to burst out in places. The soil thus exposed should be immediately covered with kutchra. For this purpose it is absolutely necessary that all the pits should be regularly and carefully inspected by the Mokaddam every day and occasionally by a responsible officer. Bhangis, if left to themselves, are certain to make a mess of the whole thing.

23. Night-soil Depots managed in accordance with the system shortly described above, almost remain free from infection of flies.

24. Samples of the night-soil manure turned out by means of the pitting system were sent to Dr. H. H. Mann of the Poona Agricultural College for analysis, the result of which is given below :—

“The material from the pit 11 months old (No. 58) is an admirable manure and nearly equal to very good poudrette from Poona and Kirkee, though not quite equal to the best. It is in good condition and satisfactory in every respect”.

“The material from the pit 7 months old (No. 31) is much wetter and much poorer. In its present state I doubt whether it is worth carting many miles and if it would reach the condition of the other pit by keeping for a few days more; it would undoubtedly pay to keep it”.



Statement showing the cost of disposal of Nightsoil and Katchra at Nasik.

Name of town.	Population.	Daily quantity of night-soil disposed of.	Strength and Cost of Establishment.			Income from Nightsoil at the rate of 1½ carts per Rupee.	Deficit Rs.	REMARKS.
			No.	Particulars.	Monthly Rate.	Annual Cost		
Nasik ..	30,098	17 Carts of 150 gal- lons capa- city each.	8	Bhangis to work on the pits ..	9	864	Rs. 741	2,355
			6	Nightsoil Cart-drivers ..	9	648		
			6	Maintenance charges for 6 Carts ..	20	1,440		
			1	Depot man ..	12	144		
			41	Bhangis to clean privies and public latrines ..	8	3,096		
		9 Katchra Carts.	25	Bhangis women to remove defecations ..	5	1,500	Rs. 2,112	1,113 carts or 5,397 c. ft. Income at the rate of 1½ Carts = Rs. 741. Annual quantity of katchra, 8,195 cartloads. Income at the rate of 3 carts per rupee = Rs. 2,731. Total annual income from night-soil and katchra = Rs. 3,472.
			9	Cart drivers ..	8	864		
			22	Male sweepers to sweep roads ..	8	2,112		
			38	Female sweepers.	4½	2,052		
			9	Maintenance charges for 9 carts ..	20	2,160		

A pit measuring 40' x 5' x 4' (800 c. ft.) holds about 33 carts of nightsoil or 33 x 150 = 4,950 gallons; 190 c. ft. therefore hold 4 Carts. About 33 Carts or 4,950 gallons of wet soil mixed with town katchra produce about 6 cartloads (1 cart = 32 basketful or 160 c. ft.) of well rot manure within a period of 9 to 11 months. At this rate, the approximate annual outturn is:—
1,113 carts or 5,397 c. ft.
Income at the rate of 1½ Carts = Rs. 741. Annual quantity of katchra, 8,195 cartloads.
Income at the rate of 3 carts per rupee = Rs. 2,731. Total annual income from night-soil and katchra = Rs. 3,472.

Village Panchayats in the Central Provinces.

Views of the Chief Commissioner.

I AM directed to submit the Chief Commissioner's reply to Sir Harold Stuart's letter No. 10, dated the 22nd March 1910, in the Home Department (Local Boards), asking for the views of this Administration on the various proposals regarding village panchayats contained in Chapter XVIII of the Report of the Royal Commission upon Decentralization, so far as they concern the Central Provinces. The question was not treated as in any way an urgent one, and it was necessary to allow ample time for ascertaining the opinions of villagers, on which Sir Harold Stuart's letter laid special stress; the last replies of the officers concerned have only reached the Chief Commissioner in the course of last month.

2. The Commission base their proposal on the statement that "the Indian villages formerly possessed a large degree of local autonomy," which autonomy, it is said, has now disappeared owing to the direct effects of British Administration and to the growth of individualism which it has encouraged, but while they do not think it possible, even if it were expedient, to restore the ancient village system, they hold that it is most desirable, alike in the interests of decentralization, and in order to associate the people with the local tasks of the Administration, that an attempt should be made to constitute and develop village panchayats for the administration of local village affairs.

3. The historical view here taken is one which the Commission themselves recognise is not applicable to the whole of India. The statement in paragraph 695 that "the village government was originally by the *panchayat* or group of heads of superior families" applies to what is described as "the joint or landlord village," but not to the "severalty or raiyatwari village," which is recognised as the prevalent form outside Northern India. It is to this latter type that, with few and

unimportant exceptions, the villages in the Central Provinces belong, and it has been pointed out by all officers who have considered this aspect of the question that, as far as the Central Provinces are concerned, the present proposals constitute a new departure and not a revival of an ancient and indigenous institution. Thus the Deputy Commissioner of Narsinghpur (Mr. C. A. Clarke) writes, "past history indeed decisively demonstrates that the panchayat system of government has never prevailed in this district, and the opinions of leading counsellors are equally decisive on the point. * * *

* * * The consensus of well-informed opinion therefore is that in this district it is the authority of the individual *mukta*, generally that of the head of the clan, which has exercised a governing influence, and that village government through the group of heads of families is entirely unknown; * * * the village panchayat has been concerned solely with social questions, not with questions of village management." And the Commissioner of Berar (Mr. F. G. Sly) writes, "Berar came under Muhammadan rule in 1318 A. D., or nearly 600 years ago, and the Muhammadan system of administration was entirely individualistic; *

* * * the village headman or *patel* was the recognised agent of the cultivators of the village, and in past history I have failed to find any traces of a village *panchayat*. * * * So far as Berar is concerned, it is not a question of restoring a system of management that has been allowed to fall into disuse, but of introducing a novel method in preference to that which has survived many hundreds of years of native rule and has been recognised and improved under sixty years of British Administration."

There are indeed indigenous institutions in the panchayats for the settlement of caste disputes, and panchayats are commonly convened for special purposes, such as the decision of boundary disputes or faction quarrels. But, except in the rare cases where the village consists of a single caste, the caste

panchayat has never had any concern with matters of village management, and the panchayat *ad rem*, appointed by consent for particular purposes, has no affinity with the permanent organization contemplated by the Commission.

4. The fact, however, that there is no historical basis for the proposed measure is not in itself a sufficient argument against the experiment being tried if it can be shown that it would be likely to secure the objects aimed at by the Commission, *viz.*, decentralization of work and the association of the people with the local tasks of the Administration, without entailing serious risks or disadvantages. And the question whether the unit should be the village or a group of villages becomes an open one.

5. It is proposed to assign to the panchayats both judicial and executive functions, and it is hoped thereby to secure in the first place a large diminution of litigation in the regular civil and criminal courts; and, in the second place, greater promptness and efficiency in the management of petty local affairs, while the people would gain by escaping the necessity of troublesome journeys to head-quarters and by the educative effect of responsibility.

The reduction of the volume of petty litigation would be a great benefit to all concerned; but the Chief Commissioner shares the generally expressed doubts whether any system of village panchayats would secure this, and would not in fact rather tend to the increase of litigiousness. The panchayat system is an institution proper to a primitive state of society, and is a means of securing rough and ready justice where justice is not otherwise obtainable. There are large areas in the Central Provinces where society is still in a primitive state, and were it now a question of evolution of administration from the beginning, it is possible that panchayats might for a considerable period do great service. But there is no tract, and outside the aboriginal areas no village, in the Province which is not now familiar with the elaborate British system with its hierarchy of authorities and its liberally granted right of appeal.

If the panchayats are to be of any use, it would be necessary to deny this otherwise universal right of appeal. The Commission has indeed felt compelled to provide a safeguard in the shape of a power of revision in case of grave miscarriage of justice. But the revisional Courts, in the absence of a record, would be helpless, and whether they interfered or declined to interfere, the system would quickly become discredited. It is true no doubt that false evidence is less rampant in the villages than in the Courts, but for the efficient and authoritative administration of justice reliable evidence is not more essential than confidence in the integrity and impartiality of the Court. The multiplication and increasing efficiency and accessibility of our Judicial Courts tend to make the people less content to accept amateur justice, and as the habit of going beyond the decision of panchayats grows, it becomes more difficult to induce men of influence and integrity to serve on them. It is reported that there are clear signs that the authority of the caste panchayats, which still decide a considerable number of petty disputes, is weakening, and that their awards are more and more frequently disputed. It seems sanguine to hope that panchayats artificially constituted by Government could command greater respect and confidence than those which represent tradition and custom.

6. The Government of India prefer the group of villages to the single village as the unit, more particularly in respect of judicial functions. This would be merely an extension of our present system of Benches of Honorary Magistrates without the safeguard of a record. There are some 300 Honorary Magistrates in the Central Provinces of whom nearly two-thirds sit at places away from Head-quarters generally in Benches. Many of these Benches do a large amount of useful work, and the system is certainly one to be maintained and judiciously extended. But it cannot be said that instances of abuse of power are unknown; recommendations for additions to the Bench are made with caution and carefully scrutinized, and when vacancies occur

there is often considerable difficulty in finding suitable persons to fill them. It is to be feared that the judicial panchayat with jurisdiction over a group of villages would exhibit the worst faults of our Benches without the advantages which a village panchayat would possess in its intimate knowledge of village affairs and the pressure exercised on it by village opinion. The position of Honorary Magistrates is generally eagerly sought after, but even so there are not a few Magistrates who think much of the privileges of the position but less of its duties; the greatly inferior position of member of a group panchayat would not be likely to tempt the best men to give Honorary service.

7. Turning to the administrative aspect of the question, the Chief Commissioner notes that among the possible functions of panchayats the Commission enumerate the construction, maintenance, and partial management of schools, the administration of fuel and fodder reserves, the management of pounds and markets, the upkeep of village roads and rest-houses, and the control of expenditure on minor works connected with village sanitation.

In regard to schools, the Commission do not seem to have been informed of the fact that in the Central Provinces no school is without its School Committee, which occupies to a very large extent the position which they would assign to the village panchayats. These Committees are mainly village committees, but include members from the feeder villages which supply pupils to the school. They are on the whole useful bodies; there may be scope for enlargement of their powers, but there is certainly no need to replace them by another organization differing only in name.

Fuel and fodder reserves specially constituted as such exist only in very small numbers in the Chhattisgarh Division, where they are at present being worked experimentally by the Agricultural Department. The ordinary village forests are the property of the malguzars, subject to rights of user by the tenant. Disputes are not infrequent, but they are between

the malguzar and the tenants as a body, and no panchayat, whether of a village or of a group, could exert any influence in their prevention or settlement. In Berar it is reported that certain "C Class" Government forests, which are nothing but village grazing grounds now managed by the patel, might possibly be better managed by panchayats. The same course might be followed with the Chhattisgarh reserves if the result of the experimental management is to show that they are worth preserving, but in both cases the panchayat would be not a village panchayat, but a Committee of representatives of the several villages utilising the reserves.

Markets are in some districts managed by panchayats, and when the Village Sanitation Act is amended, the management will be an ordinary function of Village Sanitation Committees. Regarding pounds, the general opinion is that the profits, which form an important item of the District Fund receipts, could not be assigned to panchayats while the management consists mainly in the auditing of accounts and checking of abuses which must be done by a responsible inspecting staff. The upkeep of village roads and rest-houses is a duty which in the Central Provinces custom has laid upon the proprietors of villages, but which it is becoming more and more difficult to enforce; to impose it on panchayats, without the provision of funds, would ensure its being even more neglected than it is at present, while to allow them funds for the purpose would be to fritter away the already inadequate resources of the District Councils in petty local expenditure, to the detriment of the scheme of communications of the district as a whole. There remains the subject of village sanitation. Here again the Central Provinces already possesses in its Village Sanitation Committees (for villages to which the Act has been applied) and "Basti Fund" Committees a considerable number of village panchayats under another name, and it is probable that in the majority of villages which might, in the first instance, be selected for the experiment of panchayats the change would be merely one of name.

In the smaller villages, not falling within the scope of the village Sanitation Act, the mukaddam, or village headman, is empowered by rules framed under Section 141 (2) of the Central Provinces Land Revenue Act, to levy, with the sanction of the Deputy Commissioner, contributions for the entertainment of petty establishments or the execution of specific works. It might be possible to associate a panchayat with the mukaddam for this purpose, and, as has already been noted in paragraph 5 of Sir R. Craddock's letter No. 777—VII-23-43, dated the 9th August 1911, dealing with the proposals of the Commission relating to Municipalities, this point will be considered with the new Land Revenue Bill now under examination.

8. In accordance with the request contained in paragraph 7 of Sir H. Stuart's letter, an effort has been made to ascertain the opinion of the villagers themselves on the whole question, but it has been found very difficult to elicit from them any real opinion or considered criticism. In the district (Narsinghpur) where the enquiries seem to have been most careful and thorough, there is a very strong consensus of opinion against the scheme, but the value of their evidence is to some extent discounted by the fact that the Deputy Commissioner is one of the strongest opponents of it. In Jubbulpore also it is reported that "the weight of general opinion is against the proposals in any form." Elsewhere opinions, so far as they can be ascertained, seem to be generally in favour of the principle of the proposals, but explanation and cross-examination soon revealed the widest divergences of opinion, the only points on which unanimity was secured being the necessity of maintaining the right of appeal against Judicial decisions and the impossibility of allowing panchayats to impose any kind of taxation; and in some cases it was reported that the approval of the proposal appeared to be based on an idea that Government grants would provide all the funds required. The general impression produced by the reports is that there is no strong desire in the mind of the ordinary villager for

the benefits of village self-government, but a decided aversion to its responsibilities; while the more intelligent members of rural society are very doubtful of the wisdom of trying the experiment.

9. The Chief Commissioner is thus led to conclude—firstly, that in the Central Provinces it is not a question of reviving a historical institution but of introducing a system which is alien to the customs of the people; secondly, that there is no popular demand for any such experiment or intelligent popular approval of the proposal; thirdly, that as tribunals for the decision of petty civil and criminal cases, the proposed panchayats would not command the confidence or exercise the authority necessary to make them a real benefit to the people or an efficient substitute for regular Courts: and fourthly, that there is little scope for the administrative village panchayat, since the duties that might be assigned to it are generally, in villages where panchayats are possible, already in the hands of local bodies organized on a popular basis.

10. Although, however, Mr. Fox-Strangways is not able to accept the proposals of the Commission, he would not be understood to be out of sympathy with their aims of “enlisting the help of the people in local administration in the villages.” That much has been done in this direction in the Central Provinces will be evident from the references already made to the various forms of local committees in existence. To these may be added the irrigation panchayats which are now an established feature of every Government irrigation work, and the Co-operative Credit Societies which are springing up fast—almost too fast—in all parts of the Province, and which bid fair to effect a revolution in rural economy. It is true that these Societies are purely business organizations, and have no administrative or judicial status. But they cannot fail to exercise a great influence in developing the corporate spirit and sense of public duty on which a real and effective system of local self-government can be

founded. Whether or not the Commission are right in thinking that "the scant success of the efforts hitherto made to introduce a system of rural self-government is largely due to the fact that we have not built up from the bottom," the time when this course might have been followed is long past. The true line of progress seems to Mr. Fox-Strangways to lie not in evolution but in devolution. Measures are now being taken to introduce more life and reality into the local boards, while the steady spread of education will provide us with material for the multiplication both of local administrative bodies and of Benches of Honorary Magistrates.

Sanitation in the United Provinces.

THE resolution of the United Provinces Government on the annual report of the Sanitary Commissioner for the year ending December 31st, 1914 and the report of the Sanitary Engineer for the year ending March 31st, 1915, has been before us for some time. The figures relating to vital occurrences are described on the whole to be satisfactory but we should hesitate to rest content with a slight decrease merely in the death-rate, as compared with previous years. The provincial death-rate is still high (33·46 per mille) and the Municipal death-rate rose from 39·26 to 40·95. Infantile mortality, calculated on the births of the year, rose to 233·5.

We are, however, glad to note the preventive measures taken to reduce this appalling mortality. These measures include (a) an increase from 74 to 87 in the number of travelling dispensaries, (b) the admission for training in 32 districts of 793 *dhais*, of whom 398 passed during the year, and (c) the distribution, in a few districts, of leaflets and posters on the subjects of malaria treatment and the care of young children. A marked decrease is noticeable in the number of deaths from cholera (32,498 in 1914 as compared with 60,427 in 1913). This very satisfactory improvement is no doubt ascribable to the introduction of the scheme for the prevention of cholera in rural tracts by the distribution of permanganate of potash to

patwaris for the purpose of disinfecting wells in infected areas. The scheme has made an excellent beginning and its development will be watched with great interest. Small-pox, however, claimed 17,954 victims in the year under report as compared with 8,156 in 1913. No explanation is however suggested for this increased incidence of the disease and we hope the Government will call for a special report on the causes which led to this high mortality from small-pox.

We are gratified to note that in the course of the year under review the staff of the Sanitary Engineers' Establishment received a much needed increase in three Gazetted Officers ; an immediate result of this addition to the staff has been that besides the mere preparation of projects a certain amount of construction work was also undertaken. The improvements to the Allahabad water-works have been practically completed and the same may be said of the waste meter system at Benares. We note that in Cawnpore, which suffers so constantly from the irregular course taken by the ganges, experiments were made with a view to test the efficiency of the Puech-Chabal system of filtration. The results of the experiments however have not been recorded.

Tube well experiments met with considerable success throughout the Provinces, and the supplementary aid thus furnished to large water-works stations at the more critical periods of the year can scarcely be over-estimated. The Sanitary Engineer is rightly of opinion that these boring experiments are the most important work now being done in the United Provinces, both from a sanitary and from an engineering point of view.

Municipal Election Rules (Madras).

THE Government of Madras published some time ago, for criticism, the draft rules for the conduct of elections in those municipalities in which the elective system of appointing councillors is in force. The proposed rules have

now been before the public for several months so that the public and municipal councils have had ample time to offer their suggestions and criticisms. Judging from the proceedings of municipal councils, to which the draft rules were referred, and from what has appeared in the public press, we are afraid that the rules have not met with public approval. Indeed, competent critics have pronounced them to be of a retrograde character. The present District Municipalities Act does not deal with the subject of qualifications of voters and of candidates for councillorship, nor of the determination of election disputes, and it is now proposed to deal with same by rules made under the Act. Such rules were framed in 1883 by the Local Self-Government Committee and until 1890 we find that each municipality had its own set of rules—with varying qualifications for voters and councillors, according to the conditions of each municipality. In 1890, these different sets of rules were amalgamated into two sets, one for municipalities divided into wards and a second for those not so divided. The rules were again revised and a single set of rules were, we believe, issued in 1898. These were further modified in 1904 and again in October, 1909. The draft rules now published are evidently supposed to embody the result of the experience of 30 years of the working of the elective system in the Madras Presidency.

We must express our regret that the Government should still prefer to deal with the subject in the form of rules and not embody it in the District Municipalities Act itself, a complete revision of which is understood to be in active preparation. The rules relating to questions of status and franchise form part of the substantive law in all countries, and in the other provinces of British India, they are incorporated in the municipal statutes themselves. (a) It is not understood why, in Madras, the law relating to qualifications of voters and councillors and to election disputes should be left to be dealt with

(a) See sections 11, &c., of the Bombay Act III of 1888. See also sec. 9 of the English Municipal Corporations Act, 1882.

by rules made under the statute by the executive Government. The incorporation of rules in the statute will, we have no doubt, give greater security to the people. Questions relating to the preparation of election registers and the method of voting may no doubt be left to be determined by rules framed under the Act, so as to suit local conditions. But we cannot agree that important questions of status may be similarly dealt with by rules. Furthermore, the proposal to oust the jurisdiction of civil courts in election disputes is most disappointing. It should be within the knowledge of Government that the public have greater faith in judicial tribunals than in bureaucrats.

QUALIFICATIONS OF VOTERS.—As regards the qualifications proposed to be laid down for a person to be registered as a voter: A voter to be qualified must be of the male sex and must have attained the age of 21 years and be either a graduate of a University or one registered in the Buildings and Land Tax registers of the Municipality, as owner or occupier of property of an aggregate annual value of at least Rs. 50 or assessed to profession tax in any class but the last in the schedule of the Act or assessed to income-tax. Under the Income-Tax Act, only persons getting an income of Rs. 1,000 and upwards per annum are assessable. It will thus be observed that except in the case of graduates, a person to be qualified as a voter must own or occupy immovable property whose annual value is over Rs. 50 or must hold a profession yielding an income of at least Rs. 1,000 a year. so as to be liable to pay an income tax. These qualifications, we venture to observe, are unduly high and will tend to restrict the electorate; in fact, they would keep out a very large number of persons who are eligible to vote under existing rules. In the City of Bombay Municipal Act, if a person is assessed to the qualifying tax (b) during the half-year preceding the preparation of the Municipal

(b) Qualifying tax means either the general tax or the tax on vehicles and animals other than vehicles and animals plying for hire or kept for the purpose of being let out for hire or the aggregate of both the said taxes. [See cl. 3 of Sec. 11.]

Election Roll, at the rate not less than Rs. 30 per annum, he is entitled to vote. There seems to be no reason why the limit of Rs. 30 fixed by the Bombay Act should not be adopted here.

The proposed rules omit two classes of voters—pensioners drawing Rs. 15 to Rs. 50, and persons drawing a salary of Rs. 30 to Rs. 50, per mensem. The tendency should be to increase the franchise and not to restrict it, and the withdrawal of the franchise from these persons, which will have the effect of largely reducing the number of voters, is to be regretted. It should be remembered that a large body of intelligent and educated men are drawing small salaries ranging from Rs. 30 to Rs. 50, and pensioners, as a class, are likely to be of great help in Municipal administration. These two classes of persons, moreover, will not ordinarily be subject to corrupt influences and may be safely trusted to exercise their franchise with a due sense of responsibility.

The insistence of a residence qualification in the case of owners of property seems unnecessary. Owners of property, wherever they may be, have as large a stake, if not more, in the administration of their towns, as mere residents.

The abolition of plural voting is another important matter which requires serious consideration. The draft rules provide that in the case of voters having the right to vote in more than one ward, they shall be registered only in one ward. The rule seems unfair and cannot be legally supported. A person need not be given votes in proportion to the amount of taxes paid by him, but if in several wards he owns immovable properties in respect of which he pays the qualifying taxes in each of such wards, it is difficult to see why his right to vote in each of these wards should be taken away. He is entitled to safeguard his interests in the several wards in which he owns properties by having a legitimate voice in returning the councillor for those wards.

QUALIFICATIONS OF CANDIDATES.—It is certainly desirable that the qualifications for the candidates should be raised, the object being to secure a better class of councillors. We are in agreement with the Government that only graduates of five years standing should be eligible for councillorship.

Occupiers of houses paying the qualifying tax are no doubt qualified *to vote*, but there appears to be no reason why persons who are merely occupiers should also be qualified for the office of councillor. We venture to submit that mere occupation of qualifying property should not be held to be a sufficient qualification for a councillor. (cf. Sec. II of the English Municipal Corporations Act, Arnold, pp. 27, &c.)

The rules should clearly recognise that unlike in the case of voting, to be qualified to be elected as a councillor, residence *within* municipal limits is necessary. The leading object of a municipal corporation is to invest the inhabitants of a defined locality with a corporate existence for the purpose of local government, and it is of the essence of municipal government that councillors should reside within the local limits of the municipality concerned. They should be in close touch with municipal affairs and the administration of the municipality. It is therefore desirable that residence within municipal limits should be insisted on in the case of municipal candidates.

Government servants should be prohibited from contesting elective seats. Government can always nominate them, if they so desire.

In most cases the municipalities are divided into wards for purposes of electing councillors, but in a few municipalities the election is in respect of the whole town. Except in cases where division of a town into wards is impracticable, it is desirable in the interests of efficient municipal administration, that municipalities should be divided into wards and that each ward should have its representative on the council. The system of dividing municipalities into wards for electoral and

administrative purposes has several advantages not the least of which is that each councillor can give greater attention to the wants and defects of the small area which he represents. Unless a councillor is made to identify himself with a particular ward, there will be no general improvement in municipal administration.

Under Rule 8 of the proposed rules, against the chairman's orders, an appeal lies to the Collector of the District. We are of opinion that appeals, in all cases, should lie to a civil court. Important questions of status involving intricate questions of law can be disposed of more satisfactorily by competent civil courts than by the Collector. Orders passed on appeal by a civil court may be made final.

PROCEDURE AT ELECTIONS.—It seems to us that there is no reason why Government should fill up an elective seat by nomination. Whenever any vacancy occurs in elective seats, it must be filled up only by election. Under R. 9, each electoral register is in force until the next electoral register is published and therefore the contingency contemplated in R. 11, viz., the occurrence of a vacancy in elective seats at a time "when no valid electoral registers are in existence" can hardly arise. Collectors should have no power to defer an election on any account. The rules must be framed in such a manner that whenever an elective seat becomes vacant, an imperative duty is cast upon the chairman to fill up the vacancies by election which should be held as early as possible on the occurrence of the vacancy. Rule 12 provides that the poll should be open for at least 4 hours between 8 a.m. and 6 p.m. No discretion should be left to the chairman regarding the time during which the polling shall go on. On the date fixed for election, the poll must be open between certain fixed hours, say 7 a.m. to 6 p.m. The interval—a period of 3 h. — between the closing of the poll and the declaration of the result is objectionable for obvious reasons. It is highly desirable that all objections to voting

should be decided and the votes counted and the result declared on the very day of election. To obviate any delay in the progress of election, it may be provided that where the polling officer is in doubt as to the claim of any person to vote, he may have the voting card deposited in a special ballot box. At the close of the polling this special ballot box may be examined and the polling officer or the chairman may consider the objections and pass his orders on the disputed votes, before counting the votes recorded in the ordinary ballot box. After passing his orders and ascertaining the correct number of valid votes recorded in the special ballot box, the ordinary ballot box may be examined and the result of the voting declared.

The rules regarding the procedure to be adopted at the taking of the poll do not provide for several cases that are likely to arise. It is presumed that the principles of common law will apply in cases not expressly provided for by the rules.

ELECTION DISPUTES.—Rule 30 provides for validity of elections being questioned by a petition put in before the Collector of the District. We would substitute for the Collector the nearest civil court. In England a special election court—a Judge of the High Court—has been constituted by statute for the trial of election petitions. In Bombay City, the Chief Judge of the Small Cause Court has exclusive jurisdiction. In Calcutta, the jurisdiction is confined in a Judge of the High Court sitting in the Original Side. As we have already pointed out, Rules 30—36, even if they should be retained as now framed, should form part of the substantive law. Ordinary civil courts could not be deprived of their jurisdiction by executive rules. It is very doubtful if the rules vesting an exclusive jurisdiction in Collectors will not be *ultra vires* and whether in spite of the rules ordinary civil courts will not have co-ordinate jurisdiction.

Before concluding, we may refer to some of the other more important changes introduced by the proposed rules.

(1) The privilege of companies and other similar bodies to nominate a representative at any time on the occurrence of a vacancy is taken away in cases where the person authorised to vote on behalf of the company dies or severs his connection with the firm after the 10th May of any year. [Rule 3 (ii).]

(2) The printing of an electoral register is a commendable change (R. 10).

(3) Rule 12 refers to the observance of certain preliminaries to an election *prior* to the occurrence of a vacancy. The suggested rule will no doubt have the effect of reducing the period of interregnum ; but it is commonly believed that in such cases the retiring councillor has an advantage over a new candidate. It is desirable that at least the date fixed for the publication of the list of valid nominations should be later than the date of the occurrence of the vacancy.

(4) The removal of the identifying officer seems to be an undesirable step. His removal besides throwing additional work and responsibility on the polling officer takes away a necessary check on false personation.

(5) Rule 24 (2) refers to the method of voting. The introduction of the marking system and the abolition of the envelope ballot paper seem to be of doubtful advantage. The existing system is easy to understand and people have got accustomed to it. The new system, we fear, will lead to a large number of invalid votes.

Ear-marking Funds.

[By V. R. A.]

THE question has been discussed in Bombay if the sale-proceeds of Municipal lands should not be put into a special fund to be used for reducing the amount which otherwise it would be necessary to raise by loan for the purchase of lands or the erection of buildings. The matter is

one of more than local interest and may well be considered elsewhere. On general principles I am against the creation of any funds outside the general municipal fund. The sale-proceeds should ordinarily go into the revenue receipts of the Corporation and when the budget comes to be made, it is open to the Corporation to allot moneys from the revenue account towards new buildings to be built or lands to be acquired, reducing *pro tanto* the amount that will have to be borrowed for such purposes. It may be argued that the Municipality may in the absence of a special fund fritter away such sums on other objects, but the experience of Madras in the matter of the special taxes and fees levied for the purpose of meeting the cost of the new drainage and water-supply works shows that you cannot tie up the hands of a governing body by any such artificial rules. The proper course is to go carefully into every item of expenditure before framing a budget and not to ear-mark particular receipts for particular expenditure of a kindred character. I do not forget the memorable case of the Tanjore District Board which forms an apparent exception to my statement. Here in a lucky moment of inspiration a Collector conceived the idea of putting 3 pies of the road cess into a special fund to be accumulated for building future railways. For years the fund went on accumulating unnoticed by successive Presidents and members of the District Board. And when the opportunity came, Tanjore became the owner of a railway.

Local and Municipal Accounts.

[By V. R. A.]

THE question of local accounts has been receiving attention in various Provinces. The Chief Commissioner of Assam has published rules for keeping accounts in small Municipalities and Unions; the Government of the United Provinces has framed rules for its District Boards and the Chief Commissioner of the Central Provinces

has been making rules for the Municipalities in the Berars. All this is a good sign, for a sound system of account-keeping is essential to the honesty of public transactions. The rules themselves are extremely simple and call for no criticism being the ordinary rules of public accounts. It is interesting however to compare them with the Madras Union Boards Manual, the Local Fund Manual, and the Municipal Account Code which provide for the same three sets of institutions.

The elaborateness of detail and the complexity of these codes are evidence of the comparatively greater development of local bodies in Madras. One provision in the Berar rules which may amuse the local reader is the provision requiring all accounts to be maintained in English "as far as practicable."

Electricity in Hospitals.

THE extent to which electricity enters into a modern hospital is brought home very vividly in connection with the equipment of the Sick Children's Hospital at Yorkhill, Glasgow, which was opened some months ago by His Majesty the King. The buildings are electrically lighted throughout by some two thousand incandescent lamps. The thirteen lifts and the whole of the laundry, kitchen, and other machinery are operated by this agent, for which some forty motors have been installed. Ventilation depends exclusively upon electric fans. The Intercommunicating Telephone System has thirty stations, in addition to the postal instruments. The clocks are controlled upon the magneta system; while further extensive and varied uses of electricity are shown in connection with electro-surgery, Röntgen ray, high-frequency, and other special apparatus. The installation—which was carried out under the supervision of Messrs. Sayers and Caldwell, who, acting as consulting engineers, gave expert advice upon several matters—is considered to be one of the most complete in the United Kingdom.

Board Elementary Schools in Cattle-sheds.

THE proceedings of the Peddapur Taluk Board reported in the *Godavari District Gazette* of September 1915 reveal a state of affairs which, we believe, is not uncommon in many other parts of the Madras Presidency. Sarabhavaram is a village within the jurisdiction of the Peddapur Taluk Board and so long ago as in November 1912 the Board started an elementary school in the village. The subsequent history of this Board school is given in the reply of the President of the Board to an interpellation from one of the members. "The school is located rent free in a cattle shed belonging to the proprietor of Sarabhavaram and there has been no change in its location except on certain occasions temporarily. The Sub-Assistant Inspector of schools reports that he heard that the place where the school was located was originally a cattleshed and it has been the same till now. The school is not closed during rainy season generally but temporarily shifted to other places when cattle had to be tied there. *The cattle are tied in the shed even now during night.*" Such are the surroundings of a school started and maintained under the ægis of a Taluk Board in one of the richest and most advanced Districts of this presidency. When local boards find no scruple in locating their schools in cattle sheds, why wonder if the private teacher-manager goes in for a pig-sty to locate his school?



Notes.

[Bombay.]

Bombay Corporation.

TOWN-PLANNING.—In exercise of the powers conferred by sub-section (2) of section 1 of the Bombay Town-Planning Act, 1915 (Bombay 1 of 1915), the Governor in Council is pleased to direct that with effect from the 1st day of September 1915, the said Act shall extend to the City of Bijapur, and to the Poona Suburban Municipal area and to that part of the Bhamburda and Erandawana which is situated in the City Municipal District and which lies on the left bank of the Mutha river and from the 15th September 1915, to the Municipal Districts of Hubli and Dhārwar and Panchgani and to the city of Karāchi.

FEES FOR EXAMINATION OF ARTICLES BY MUNICIPAL ANALYST.—The Bombay Corporation has given sanction to the Municipal Analyst's fees for the examination of milk and for Vidal's test for enteric being reduced from Rs. 15 and Rs. 10 to Rs. 10 and Rs. 5 respectively from the current official year.

THE OVERBURDENED TAX-PAYERS.—The owners of buildings in Bombay will feel thankful to Dr. Nadirshaw H. E. Sukhia on whose motion the Corporation passed the following resolution :—

“That in view of the various costly sanitary improvements involving structural alterations in large or small and old or new buildings that owners are indiscriminately required to carry out from time to time by different Municipal Departments, viz., the Health, the Malaria, the Drainage, the Water, and the Executive Engineer's, and in view of the prices of building materials and sanitary fittings and appliances having so greatly enhanced since the present Municipal Act of 1888 came into force over a quarter of a century ago, and in view of the very heavy incidence of taxation in the city, and in view of the fact that in proportion to the age of buildings in the city much heavier repairs become necessary, the

Commissioner be requested to report whether it is desirable and feasible to give some relief to the over-taxed property-holders in the city, and, if so, with a view to have the sanitary improvements expedited without opposition or delay, whether section 154 of the Municipal Act should not be amended so as to allow, in fixing the rateable value of properties, a deduction of 20 per centum instead of 10 per centum as at present of the annual rent, as the latter is not at all sufficient for even ordinary repairs and painting or whether the provisions of the Municipal Act, relating to payment of compensation to owners should not be modified so as to enable the Commissioner to grant proportionate rebate in property taxes by instalments or otherwise to those house-owners who have to incur heavy costs in complying with the Municipal requisitions regarding sanitary improvements with respect to existing buildings."

MATHERAN HILL STATION MUNICIPALITY WATER-WORKS LOAN.—The Matheran Hill Station Municipality have applied for a loan of Rs. 95,200 under the provisions of the Local Authorities Loans Act, 1914, for the execution of works in order to provide a good pipe water-supply to the Hill Station. The estimated cost of the first stage which is to be undertaken is Rs. 1,90,408. Of this a free grant of Rs. 95,208 has already been sanctioned by Government.

[Bengal.]

Calcutta Corporation.

COMMUTATION OF PENSIONS.—The *Calcutta Gazette* of September 1st publishes the rules made by the Corporation of Calcutta under cl. (b) of section 73 of the Calcutta Municipal Act, for regulating the commutation of pensions granted to Municipal officers and servants into lump sum payments.

[Howrah Municipality.]

WATER-WORKS IMPROVEMENTS.—The Howrah Municipality has applied for a loan of Rs. 1,00,000 from Government bearing interest at the rate of 4 per cent. per annum and repayable in forty equal half-yearly instalments of Rs. 3,655-8-0 each, to meet the cost of the Water-works Improvement Scheme.

[Suri Municipality.]

DRAINAGE SCHEME.—The scheme submitted by the Commissioners of the Suri Municipality for providing drainage to a portion of that Municipality has been approved by the Governor in Council. The particulars of the scheme are as follows :—

(a) The scheme provides for the construction of main and branch drains in the more thickly populated parts of the town of Suri. All the outfalls will be into the rice-fields at some distance from habitations. Existing pucca drains will be remodelled and in some places the roads will be raised. Provision has been made for flushing of drains by means of water-carts.

(b) The estimated cost of the scheme is Rs. 33,000.

(c) The estimated cost of the maintenance is Rs. 1,500 per annum.

(d) The sum of Rs. 33,000 on account of the cost of the scheme will be met as follows :—

	Rs.
Loan to be taken by the municipality from	
the Government	22,000
Contribution from Government	11,000
Total	<u>33,000</u>

(e) The loan of Rs. 22,000 will bear interest at 4 per cent. per annum, and will be repaid in 15 years by 30 equal half-yearly instalments of Rs. 982-4-9 each.

[Madras.]

Coimbatore District Board.

FINANCIAL HELP FOR BORING WELLS.—The following interpellation put by a member of the District Board was disallowed under Rule 1 of the Rules for interpellating the President: In view of the fact that the major portion of the lands in this District are cultivated by means of well irrigation, will the President recommend to the Board the

adoption of the system in Bombay District Boards whereby the Boards offer financial help to agriculturists for boring wells on condition that they must pay it when they are successful and need not do so if the boring is unsuccessful?

[United Provinces.]
Allahabad Municipality.

INCREASE OF ASSESSMENT DURING THE YEAR.—The following revised rules have been passed by Government in substitution of the existing rules (20 and 29) with reference to the assessment and collection of house-tax in the Allahabad Municipality:

The following shall be substituted for existing rules 20 and 29:—

“20.—(1) If, during the currency of any assessment, any increase of rent or alteration or improvement is made to any house or building which may enhance the annual value of the same, or if a house assessed on capital cost is subsequently, during the currency of the assessment leased out at a rent giving an annual value greater than that resulting from the assessment on capital cost, the board may cause such house or building to be again valued, and such last mentioned valuation shall remain in force and the tax shall be assessed according to it until the expiry of the current period of assessment, or until within that period another increase of rent or alteration or improvement is made, in which case the house or building may be valued and rated again.

“(2) If, during the currency of any assessment, the value of any house or building shall suffer depreciation by a decrease in the annual value or otherwise, the board shall, as soon as practicable, on application being made to the Secretary in writing by the owner of such house or building, cause it to be again valued; and such last mentioned valuation shall remain in force, and the tax shall be assessed according to it, until the expiry of the current assessment, subject to the provisions of the preceding clause of this rule.”

“ 29. When any house or portion of a house in respect of which tax is levied falls vacant, or is demolished or removed otherwise than by the order of the municipal board, the owner shall be entitled to a refund of the proportionate part of the tax paid or to exemption from the proportionate part of the tax payable on account of the period subsequent to such falling vacant, demolition or removal: Provided that notice thereof in writing is given to the municipal board within 15 days from the date of such falling vacant, demolition or removal. If the said notice is not given within the said period of 15 days, the owner shall not be entitled to a refund or to exemption for any day up to and including the date on which the notice is received in the office of the board: Provided also that no owner shall be entitled to claim a refund or exemption of tax on account of a house or building remaining vacant for a period of less than three consecutive months.”

Public Health and Sanitation.

Model Lectures on Sanitary Subjects.

[PREPARED BY MAJOR W. A. JUSTICE, M.B., C.M., D.P.H., I.M.S.]

Disposal of refuse.

STREET sweepings—offal from stables and cowsheds—floor sweepings and kitchen rubbish from houses, coffee shops, bazaars, etc.,—the efficient disposal of this is of great importance. It should on no account be thrown on the street or into backyards but should be collected in receptacles which should be emptied daily by the rubbish carts. If allowed to collect near houses, it soon becomes a nuisance giving off unpleasant odours and is certain to become a powerful breeding place for flies. Your duty to your neighbour as well as to yourself should assist you to give this important subject regarding the sanitation of your dwellings your unremitting attention.

The amount of rubbish varies, of course, according to circumstances and no definite estimate can be laid down of the amount to be removed: it can only be gained by experience. In Madras town, 304 tons of rubbish are removed and disposed of daily. The best method of disposal is burning. In small towns and villages, small incinerators such as are now used in various parts of Madras may well be used. In larger towns, you get large incinerators of the type seen at Basin Bridge and Krishnampet in Madras. Incineration is difficult to carry out in places with a heavy rainfall such as the west coast and sheds for storing and drying the rubbish have to be erected in addition to the incinerator. The next best method is to use the rubbish to fill up low-lying land. A site is selected which must be at some distance from the village or town—the land must be dry and should not be subject to flooding. If subject to flooding, it should first be drained. The garbage is deposited to a depth of two feet and covered with dry earth—the land can then be cultivated with crops—grass, sugarcane or tobacco. It is better to screen the rubbish of tins, pieces of wood, stones, broken chatties, etc., placing these at the bottom layer and superimposing the screened rubbish. Some towns and villages derive an income from the sale of rubbish which must be stored. To store rubbish requires much care and attention, otherwise the *depôt* is bound to become a nuisance and can be smelt over a mile away. The *depôt* if on level or low lying ground should be bunded all round to prevent flooding. Each day the rubbish deposited should be covered with dry earth. Sites for rubbish *depôts* should be selected at considerable distance (over a mile) from habitations; this is necessary to protect wells and other sources of drinking water and to minimise the danger of flies. Rubbish is sometimes used to fill up tanks—the water in the tank should be first drained away or pumped out; drains placed at a depth of 5 feet so that the water will not again rise above this, and the rubbish deposited over them.

Rubbish carts, in large towns, are generally of 28-32 cubic feet capacity but in the west coast they are smaller as

they are drawn by coolies. The carts should never be filled too full as the rubbish falls out on the road to the dépôt.

The removal of rubbish in many towns is let out on contract which is not satisfactory as when it is run departmentally—each town should have its own plant and staff.

Night-soil should under no circumstances be mixed with rubbish. It should always be separately removed and disposed of.

Precautions against Summer Diarrhœa in Infants.

The Ilford Urban District Council have issued the following instructions to prevent summer diarrhœa in infants. The instructions are printed in a card which is sent to the parent of every child born within the last 12 months.

1. Hot weather is very likely to cause fatal diarrhœa in infants.
2. Flies are apt to carry the infection of diarrhœa.
3. All windows should be kept open day and night so as to obtain as much fresh air as possible.
4. Infants fed by hand are more likely to suffer from diarrhœa than infants fed on the breast.
5. All milk should be boiled before use.
6. All vessels used for storing milk must be kept scrupulously clean, and covered with a clean cloth to keep out the flies and dust.
7. Feeding bottles and teats must be kept in clean cold water.
8. When asleep a muslin curtain should be spread over the baby, to prevent the flies settling on the child's mouth.
9. If the baby shows any signs of indigestion or diarrhœa, no milk should be given for 24 hours, but a little plain barley or rice water instead; if the diarrhœa then continues, medical advice should be at once obtained.

Memorandum on the Steps requisite to be taken on the Notification of a Case of Small-pox.*

At the present time an outbreak of small-pox would be especially serious; and, as there are possibilities of importation of small-pox, it behoves all Sanitary Authorities to see that all preparations for dealing with this disease are in working order. The present Memorandum is concerned with the measures needed for promptly controlling the first notified cases of small-pox, as it is on such action that success chiefly depends.

The steps indicated below are those which would normally be taken in a well organised sanitary district; but it has been thought well to set them out, especially for the information of medical officers of health of smaller districts, and of deputy medical officers of health acting for officers who have gone on active military service.

Recent vaccination or re-vaccination constitutes the only safeguard against attack for persons exposed to the infection of small-pox, and all the measures set out below can be carried out with a much more certain prospect of success in a well vaccinated community.

Notification of the Disease.

The weekly statistical returns forwarded by the Local Government Board to every medical officer of health in the country should be carefully examined, in order that the presence of infection in the country may be early recognised.

When the first case of small-pox is notified in a sanitary area, the medical officer of health should at once confidentially acquaint each medical practitioner practising within the area, in order that he may be warned in connection with any suspicious case coming under his charge. At the same time neighbouring medical officers of health should be similarly warned.

* From a memorandum issued by the Local Government Board,

In the ordinary course, notification of cases of infectious disease is made through the post. For small-pox this means the loss of valuable time. It is important that the medical practitioners in the sanitary area should immediately communicate personally or by telephone to the medical officer of health any suspicion they entertain as to a case of small-pox, so as to enable the medical officer of health at once to visit the suspected patient with the practitioner. Medical officers of health of combined areas should arrange to secure the object aimed at in this paragraph by special local arrangements.

The notification of a case of small-pox calls for immediate inquiry by the medical officer of health into the movements of the patient—

(a) during the fortnight preceding the commencement of his attack ; and

(b) during the period between the onset of his first symptoms and the hour of notification.

Painstaking inquiry under the first heading will, in most instances, enable the source of infection in a previous patient to be ascertained. This patient may not previously have been recognised as having small-pox ; and in this event it becomes necessary to prepare an immediate list of all persons who have been in contact with him, and submit them to systematic surveillance, as also all persons who have been in contact with the notified patient.

With the same object in view—the prompt discovery of unnotified cases of small-pox—the notification of cases of chicken-pox may be made compulsory. In a number of outbreaks of small-pox, valuable time has been lost by mistaking cases of this disease for chicken-pox.

Following on the prompt recognition and notification of each case of the disease, the action required includes :—

1. The immediate removal of each patient to an isolation hospital ;

2. The satisfactory disinfection of the infected house and its contents, including persons who have been in contact with the patient ;

3. The tracing and daily surveillance of all known contacts ; and

4. The immediate vaccination or re-vaccination of these contacts.

Hospital Provision.

Satisfactory hospital provision for small-pox patients can rarely be improvised. A Sanitary Authority which has not such accommodation, either independently or under an agreement with some other Sanitary Authority, is incurring a heavy responsibility. Smaller Sanitary Authorities can best secure such provision by combined action with other Sanitary Authorities. The modern possibilities of communication by means of motor ambulances render it practicable for a single hospital to serve a large area. In view of the importance of having immediate hospital accommodation available for small-pox patients and of the extreme ease with which the infection of small-pox is spread, it should be arranged that :—

1. Hospital accommodation for isolating first cases should at once be available ;

2. More extended hospital accommodation should be available at short notice ;

3. The hospital should be as remote from inhabited districts as is practicable ;

4. The treatment of small-pox should not be undertaken on the same site as that of any other disease ;

5. The hospital site should be adequately fenced, to prevent unauthorised communication between the occupants of the hospital and persons outside ;

6. The rules as to disinfection and as to vaccination or re-vaccination of staff should be as strictly enforced as in the case of contacts with patients, before their admission to hospital, *e.g.*, sanitary inspectors and disinfectors.

The provision of an ambulance for the removal of patients is important.

Some Sanitary Authorities have arranged for the treatment of cases of tuberculosis in their small-pox hospitals; and these arrangements have been approved by the Board subject to satisfactory provision for the immediate hospital isolation of early cases of small-pox. It is not suggested that these arrangements should be altered.

Disinfection.

Thorough and complete disinfection is needed in this more than in any other infectious disease. This cannot be carried out unless there is an efficient disinfecting apparatus available for disinfection of the bedding and clothing of patients and contacts. As is well-known, special care is needed in the conveyance of such articles to the disinfecting apparatus, as also in connection with ambulance provision.

In order to secure adequate disinfection and cleansing of an infected dwelling by the well-known methods, it is desirable that persons who have been in contact with the patient should be removed to a shelter, where they can be temporarily housed during the process of disinfection of their clothing and bedding. At this time the offer of vaccination or re-vaccination should be again pressed if not previously accepted.

The Tracing and Surveillance of Contacts.

As already indicated, a careful list should be compiled of all persons who may possibly have been in contact with the patient, or with the previous patient from whom he was infected. The preparation of this complete list should be one of the earliest tasks of the Public Health Staff, after the notification of a case of small-pox. These contacts need careful surveillance during the sixteen days after their exposure to infection. They should be visited daily and carefully questioned and examined, especially from the tenth day after their first exposure to infection onwards, until it is certain that the danger of development of disease has passed. When the contacts are numerous, this task is difficult and irksome; but the success of action for

controlling an outbreak depends largely on the completeness with which the task is carried out, and on the completeness with which the list of contacts has been prepared and the source of infection has been traced.

If any contacts have removed to another area, the medical officer of health of that area should at once be informed. If, for any reason, it is feared that the list of contacts is incomplete, a house to house visitation may be desirable in the neighbourhood in which a case of small-pox has occurred, to make inquiries as to suspicious illness and to advise vaccination or re-vaccination. If further cases are feared, common lodging houses and other collections of itinerant persons should receive special supervision.

In view of the fact that small-pox is now commonly derived from abroad, all notifications from Port Medical Officers of Health as to persons arriving in a given area from ships on which cases of small-pox have occurred should receive the same attention as is given to local contacts.

The Vaccination or Re-vaccination of Contacts.

The measures so far enumerated are only successful when they are carried out by a staff, including the medical officer of health, sanitary inspector, ambulance driver, disinfecter, nurses and wardmaids, who have been rendered immune to small-pox by recent vaccination or re-vaccination. That is the teaching of past experience.

Similarly, every person who has been in contact with the small-pox patient or his belongings, and who is unprotected by fairly recent vaccination or re-vaccination, should be so protected. When this can be done, the control of small-pox becomes one of the most satisfactory measures in public health administration. Unless this can be done, there is constant risk of a failure to control the disease.

It is extremely important that vaccination should be carried out promptly after exposure to infection, and for this purpose the medical officer of health should act in the closest

co-operation with the public vaccinator from the first. If any difficulty is anticipated under this heading, it is desirable that the Sanitary Authority should approach the Board of Guardians with a view to the medical officer of health being appointed deputy public vaccinator.

Special Instructions to Vaccination Officers.

1. On the occurrence of any prevalence of small-pox the Vaccination Officer should give his first and special attention to the particular localities in which the infection exists.

2. In order that for this purpose he may have the earliest possible information of the occurrence of cases of the disease, the Guardians should invite the Medical Officer of Health to give information to the Vaccination Officer of each case of small-pox as soon as it is notified, and, with the same object, the co-operation of persons who visit among the poor should be secured. They should also instruct their District Medical Officers to give the Vaccination Officer immediate notice of every fresh case of small-pox which comes under their care, and should arrange with the Registrars of Deaths to forward to him immediate notice of each death registered from small-pox. For convenience of transmitting such notices, each District Medical Officer and Registrar should be supplied with forms duly stamped for post, or with post-cards adapted for the purpose. Private medical practitioners may be invited to give similar information.

3. In each locality in which the infection exists, the Vaccination Officer should, with the utmost possible dispatch, personally ascertain what children are unprotected by vaccination, and should use his utmost exertions to obtain the prompt vaccination of all such children. Generally speaking, his own judgment and local knowledge will guide him as to the manner in which his inquiries can best be made; but in infected courts or alleys, as well as in certain kinds of streets, inquiries from house to house, and, in tenement houses, from room to room, will be indispensable.

4. Where any child (between the ages of six months and fourteen years) who has not already had small-pox, or has not been duly certified as insusceptible of vaccination, or has not come within the terms of exemption under section 2 of the Vaccination Act, 1898, or whose vaccination is not at the time standing postponed under medical certificate, is found to be unvaccinated, the Vaccination Officer should take steps to procure the vaccination of the child with all practicable speed.

With regard to unvaccinated children, not yet six months old, who may be in infected localities, the Vaccination Officer should advise the parents not to incur the unnecessary risk of waiting for the child to reach that age before having its vaccination performed. In no house in which there is small-pox ought any child to remain unvaccinated, unless on medical examination it is pronounced unfit to be vaccinated.

5. All representations made as above should be accompanied with information as to the existing arrangements for vaccination, including any special temporary provisions which may have been made under Section 7 of the Vaccination Act, 1898, for Public Vaccination in the district.

6. The Vaccination Officer should make it well known that the Public Vaccinator is at liberty to re-vaccinate all persons who shall not be less than ten years old and shall not have been previously re-vaccinated within a period of ten years, who apply to him for that purpose; and that persons not vaccinated since childhood, who are likely to be exposed to contagion ought to be re-vaccinated without delay. Above all, this is necessary for persons whose original marks of vaccination are imperfect.

7. In the event of many artisans requiring re-vaccination, and being unwilling to lose part of their working day for the purpose of securing the desired protection, it may be expedient that the Vaccination Officer should confer with the Guardians as to attendances being given by the Public Vaccinator at some specified hour in the evening.

8. Generally, the Vaccination Officer should take every means to ensure that the vaccination of his whole district is as complete as possible. He should make frequent examination of his birth lists; and deal, as soon as practicable, with every case of default as it arises; and he should be prompt and diligent in his inquiries respecting the other children to whom his duties extend under Section 7 of his "Instructions," as issued by the Local Government Board.

9. The Vaccination Officer should give immediate information to the local Sanitary Authority of any house in which small-pox has appeared, and of which no information has reached him from the Medical Officer of Health, in order that needful means of isolation and disinfection may be taken.

The Fly Danger.

The campaign which was inaugurated in the United States some two or three years ago for the extermination of the fly has extended to England. Prevention is better than cure; and this end can be achieved to a very pronounced degree by rendering the household dust-bin and other garbage receptacles absolutely untenable by the pest. According to the pamphlet which has been issued by the Imperial College of Science, the fly has been proved guilty of carrying the germs of typhoid, tuberculosis, cholera, anthrax, and plague; while it is suspected of being the principal factor in the dissemination of ophthalmia, dysentery, and infantile diarrhoea. As part of the house-fly campaign instituted by the Zoological Society, Professor Maxwell Lefray, in a lecture, has said it was worth noting that flies needed moist conditions for their larvæ; dry material breeds no flies. Flies also dislike darkness. Municipal and other 'tips' should be treated with chloride of lime. The burning of refuse of all sorts was strongly recommended. Sulphate of iron might be applied either powdered or in a 20 per cent. solution. When possible, stable manure should be kept in covered enclosures. For open receptacles or heaps most satisfactory results were obtained from borax treatments.

Borax in small amounts, such as one and a quarter pounds per eight bushels of manure, destroyed 98 to 99 per cent. of the maggots. A 20 per cent. solution of slaked lime was also said to be a good larvicide. For indoors, a solution of formalin (40 per cent. formaldehyde), one tablespoonful to one pint of water, with the addition of a little bread or sugar, attracts and poisons flies if distributed in shallow vessels in light spots. Flies avoid shade. Vessels with a crust of bread in each should be set out overnight to draw the earliest flies. Milk, water, food and fruit should be covered, and kept in fly-screened larders or meat-safes. The medical officer for Westminster has stated in a pamphlet that rooms in which there are many flies may be cleared by pouring twenty drops of carbolic acid on a hot shovel or burning cones of Persian insect powder on a dish or plate. The cones may be made by moistening the powder and allowing it to dry. In both cases the fumes stupefy the flies, which fall and can be swept up and destroyed.

Consumption and Housing.

Recent legislation to encourage proper housing in Ontario bids fair to be a potent factor in the work of prevention. No doubt the recruiting stations of tuberculosis are found insanitary, over-crowded houses. The intimate social contact, the insanitary environment, the moral turpitude, the tendency towards dissipation, all are factors involved. Moreover, men and women thus associated are not generally so by choice, but by necessity. Insufficient wages often drive these unfortunate individuals to domicile themselves in such a way as to reduce to the lowest possible minimum the expense of natural existence. The over-crowded, insanitary tenement houses are a prolific source of physical, mental and moral sorrow. From its unhallowed walls creep forth diminutive men and women, degraded and degenerate. Out of these abodes come forth anæmic, palsied, subnormal children. Every child's start to a healthy normal family life must be regarded as a legitimate claim by the Province or State.

This Housing Problem in Ontario is not confined alone to the cities, but is frequently met in rural districts. Here, however, it is individual, rather than corporate. The house is occupied by one family generally, and is unventilated and unhygienic, due to tradition or ignorance. The only cure for this condition is education. It is not possible to legislate here. It is necessary to bide the time when a new generation will arise with more knowledge than this one. It is highly probable that the great decrease of pulmonary tuberculosis has been due to the agitation for the open sleeping apartment, and to the fact that many people have adopted more open air advantages when sleeping. The new architect now included the open sleeping room in his dwelling-house plans. The story of the evolution of the sleeping porch will be one of the interesting chapters of architectural history in the future.—*Extract from Report of Dr. Bruce Smith, Inspector of Hospitals in Ontario.*

Water Supply.

Paris Water Sterilizing Plant.

THE city of Paris is now operating a large plant in the suburbs which is designed for filtering and sterilizing the water of the Marne River, and the present plant can supply about 2,500,000 cubic feet of water daily. Sterilizing after filtration in sand filtering basins is done by the ozone method, and the results are most satisfactory especially in the absence of coli bacillus with which the Marne water is charged. Clarified water from the filters is sent by rotary pumps to a series of ten ozonising tanks or columns. Above the range of columns is a large cross collector, or circular feed tank, of three feet diameter, and the water descends from it into each column, passing on its way through aspirator nozzles so as to draw in ozonised air along with the water. Contact with the ozone is obtained in the water column, then the purified water flows out by a top orifice and is aerated

by cascading, then goes into the off take piping. An elaborate plant is used for the production of ozone, and before going into the electric ozonisers the air is dried by condensation of moisture in a set of freezing chambers, in which a temperature of 2 deg. Cent. is maintained by warm piping having a circulation of chloride of methyl, this being liquified by two vertical machines of large output. Two air fans deliver the dried air into the ozonisers. Four electrically driven centrifugal pumps are used to deliver the filtered water to the sterilizing column. The present plant is operated by the Municipality of Paris.—*Scient. Amer.*

Testing and refixing private meters.

The Bombay Corporation have given their approval to the following scale of fees being fixed for removing meters for testing purposes and refixing the same after the test is completed:—

For removing and refixing $\frac{1}{2}$ ", $\frac{3}{4}$ " or 1" Kennedy meter	Rs.
... ..	4
Do. do. 1 $\frac{1}{2}$ "	10
Do. do. 2"	16
Do. do. 3"	20
Do. do. upwards of 3":	The actual cost, a deposit of Rs. 30 being taken in advance.

For removing and refixing $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1" or 1 $\frac{1}{2}$ " meters other than Kennedy's	Rs.
Do. do. 2"	6
Do. do. 3"	10
Do. do. 4"	12
Do. do. upwards of 4":	The actual cost, a deposit of Rs. 15 being taken in advance.

Water Leakages.

The Hydraulic Engineer of the Bombay Corporation reports that during June 1915, 1396 leaks were repaired and 1665 defects in house fittings and 712 defects (including 6 bursts on mains) were found while inspecting. The total leakage observed in gallons per hour is reported to be 70,640.

Government Orders and Notifications.

[Bombay.]

*Extension of the Principles of Local Self-Government
in Regard to Local Boards.*

WHILE the recommendations of the Decentralization Commission which form the basis of the Resolution of the Government of India dated the 28th April, 1915, are generally in accordance with the methods of administration already prevailing in the Bombay Presidency so far as municipalities are concerned, it is evident that the administrative system of the local boards of the Presidency falls short of the standard set by the Commission in respect to the organization of these bodies on a popular basis and their emancipation from official control. Although it must be recognized that such causes as the essential difference between urban and rural conditions, the rigidly restricted resources of the local boards, the absence in their case of powers of self-taxation, the extent to which their funds are regularly absorbed by the ordinary maintenance charges of existing works and institutions, and, finally, the comparatively limited scope of their functions generally, militate against progress, it is nevertheless the fact that, in comparison with the substantial advance which has taken place of late years in respect to municipalities, the development of local self-government in the case of local boards has been disappointingly slow. The annual reports on the administration of these bodies testify with monotonous reiteration to the lack of interest and the absence of active co-operation on the part of the non-official members and the almost complete apathy and indifference of the electorate. It is difficult to avoid the conclusion that this state of affairs is to a large extent attributable to the fact that the system of administration of the local boards still remains what it was when these bodies were first constituted under the present Act some thirty years ago and that during all that

time there has been no movement in the direction of endowing them with a more liberal organization and releasing them from the guiding strings of official control.

In these circumstances the Governor in Council is of opinion that the time has come when the whole question of local board administration in this Presidency should be brought under review for the purpose of ascertaining whether it is not possible to introduce into the existing system certain changes which, while leaving unimpaired the power of Government and their officers to intervene when maladministration or the culpable neglect of obligations on the part of local boards occurs, will not only confer on these bodies a freer scope and greater responsibility in the management of their affairs, but will also ensure that they themselves are by the nature of their constitution more widely and truly representative of the interests which they administer. In other words, the object which he has in contemplation is the infusion of a more vital and real spirit into the principle of local self-government as applied to the administration of the rural boards of this Presidency.

With this aim in view the Governor in Council has decided to appoint a Committee comprising both officials and non-officials and representative of every division of the Presidency for the purpose of considering and reporting what changes it is desirable to effect in the constitution of the district and taluka local boards and their system of administration in order to secure a greater measure of progress in the development of this form of local self-government. The members of the Committee will be as follows:—

The Honourable Mr. H. S. Lawrence, I.C.S., *Chairman*.
Mr. F. G. Pratt, I.C.S.
Mr. C. N. Seddon, I.C.S.
Mr. G. E. Chatfield, I.C.S.
The Honourable Rao Bahadur G. K. Sathe.
The Honourable Mr. V. J. Patel, Bar.-at-law.
Rao Bahadur R. C. Artal, I.S.O.
Mir Ayub Khan *walad* Jam Mir Khan of Lasbela.

Among the questions which the Committee will more particularly consider in the course of their deliberations are those referred to in paragraphs 27 to 30 and paragraph 34 of the Resolution of the Government of India relating to elective majorities on rural boards, the selection of the chairmen of such boards, their financial resources, their powers of taxation, and the degree of supervision to be exercised over the estimates for and the execution of their public works. The Governor in Council hopes that it will be possible for the Committee to submit their recommendations not later than the end of October next. [G. Res. No. 6444, dated 18-8-15.]

[Madras.]

In G. O. No. 1129L., dated 7th August 1912, the Government impressed on local bodies the desirability of working out a sanitary programme for a series of years in consultation with the District Medical and Sanitary Officer or the Sanitary Commissioner. Presidents of District Boards are now requested to communicate to the Sanitary Commissioner from time to time all rural sanitary schemes of a general nature even in cases in which such schemes are not included in the sanitary programme of the district. [G. O. No. 996L., dated 14-7-1915.]

Legislative Intelligence.

[Central Provinces.]

THE Hon'ble Rai Bahadur Bishun Dutt Shukul asked if the Government will state what action has been taken during the last three years by the District Councils, especially of districts under the Jubbulpore Division, for constructing new village roads or improving their condition where such already exist.

Government replied :—

A certain sum is annually budgeted for by District Councils and Boards for the maintenance of village roads and cart tracks through the Local Boards, and is, as far as possible, devoted to the improvement of *nallah* crossings and the easing

off of approaches. The Chief Commissioner was pleased to note considerable progress in this direction during a recent tour in Damoh, and general orders were issued in the last Resolution on the working of District Councils and Local Boards enjoining special attention to the matter in all districts. Generally speaking, funds are not freely available at present for new construction, pending the completion of the more important lines of district communication which have been brought on the sanctioned Road Scheme. The figures of expenditure under the heads "Construction" and "Maintenance" of Village Roads for the past three years are as follows:—

	Construction. Rs.	Maintenance. Rs.
Central Provinces ...	19,572	91,457
Berar ...	2,000	51,357
(Jubbulpore Division ...)	...	36,575)

Part of the above amounts has been expended on the improvement of main roads within villages. And a scheme is now under consideration in Berar for the systematic maintenance of the main village roads within areas to which the Village Sanitation Act applies by the application of the net bazaar cess, which should properly be devoted to this object.

The Hon'ble Rai Bahadur Bishun Dutt Shukul asked if the Government will be pleased to state what steps have been taken or are proposed to be taken with a view to improve the water-supply of rural areas and to introduce experimental measures for the formation of Village Unions or Circles as recommended by the Resolution of the Government of India dated the 23rd May 1914.

Government replied:—

Amounts of Rs. 60,000 in the years 1913-14 and 1914-15 and of Rs. 55,000 in the current year have been distributed to District Councils out of the Sanitary Grant for the improvement of rural water-supply. In addition to these sums, District Councils also apply a portion of their available funds

for the construction of wells in villages. The expenditure under these heads was Rs. 82,187 in 1913-14 and Rs. 1,23,339 in 1914-15.

It has not been considered possible at present to form Village Unions to deal with questions of rural sanitation, but a provision has been inserted in the new Land Revenue Bill by which panchayats may be associated with the *mukaddam* to aid him in carrying out his duties in regard to the sanitation of the village.

In this way it is hoped that public opinion will be trained in the direction of greater co-operation in village sanitation and the formation of Village Unions may become practicable.

The Hon'ble Rai Bahadur Bishun Dutt Shukul asked if Government will be pleased to state what steps are proposed to be taken with a view to constitute village panchayats on the principles enunciated by the Government of India in their Resolution on Local Self-Government dated the 28th April 1915 and if Government will lay for the information of the Council previous papers, if any, bearing upon the subject and indicating the line of action taken by them in that direction, previous to the issue of the above Resolution.

Government replied :—

The question of instituting village panchayats was fully considered by the Administration in 1912 on a reference from the Government of India with regard to the recommendations of the Decentralisation Commission. It was then found, after consulting a large body of both official and non-official opinion, including that of the villagers themselves, that there was no popular demand for the institution of judicial or administrative panchayats, which are in no sense historically indigenous to these Provinces. A copy of the Administration's letter,* dated the 10th July 1912, addressed to the Government of India, which summarises the opinions obtained and gives the general conclusions arrived at, is laid on the table.

* The letter is printed at p. 830 *supra*.

In answer to a previous question put by the Hon'ble Member, reference has been made to the insertion in the new Land Revenue Bill of a provision enabling a committee of residents to be associated with the *mukaddam* to assist him in carrying out his duties in connection with village sanitation. Further than this the Administration is not at present prepared to go in the direction indicated in the Hon'ble Member's question.

[Bengal.]

The Hon'ble Rai Nalina'sha Basu Bahadur asked Government whether the scheme for the supply of filtered water to the town of Asansol has now been completed and, if so, when the work is likely to be commenced ?

The following reply was laid on the table :—

Two alternative detailed schemes have been submitted to Government and are under consideration. Work cannot be commenced until it has been decided which scheme will be adopted. It is hoped that a beginning will be made during the current financial year.

The Hon'ble Babu Surandra Nath Ray asked (a) if the Government were aware that from want of definite instructions, the District Boards found it difficult to spend the amount derived from the Public Works cess in improving the supply of good drinking water in villages and for other sanitary improvements and (b) whether the Government were considering the desirability of issuing instructions to all District Boards as to how the amount derived from Public Works cess should be spent ?

The following reply was laid on the table :—

(a) The answer is in the negative.

(b) District Boards have been informed that Government consider it a matter of importance that they should set apart a substantial sum from their increased resources for the sanitation of villages and for anti-malarial measures.

A copy of the following circular was also laid on the table.

[No. 388-92 M. dated Calcutta, the 7th February, 1914.]

I AM directed to refer to Government Order No. 980 T.—M., dated the 3rd November, 1913, addressed to the Accountant-General, Bengal, copy of which was forwarded to you with Memorandum No. 981—85 M., dated the 3rd November 1913. It was stated therein that Government had decided to surrender the Public Works cess to District Boards unconditionally for the present year. In coming to this decision the Governor in Council was influenced by the consideration that District Boards are in an exceptional position to gauge local requirements, and to determine accordingly to what specific purpose this addition to their income can most profitably be devoted. While leaving the District Boards a free hand in the expenditure of this income for the current year, His Excellency in Council desires to impress upon them the importance of setting apart a substantial sum for the sanitation of villages and small towns, for the improvement of water-supply and for anti-malarial measures.

2. Instructions have already issued regarding the measures to be taken for providing a pure water-supply in the interior. The question to which I am to invite special attention at the present time is the prevention of malaria. The value of quinine as a remedy for this disease has been abundantly proved, but the efficacy of the drug is largely dependent on the adequacy of the quantities in which it is administered. The attention of Government has been directed to the fact that the average quantity of quinine administered to each patient in District Board dispensaries falls far short of the minimum necessary for effective treatment. The Inspector-General of Civil Hospitals has now issued instructions to all Civil Surgeons to see that in future adequate quantities of quinine are given in all cases of malaria. Compliance with these instructions will involve considerable additional expenditure. This is a legitimate charge upon District Boards and should be met without difficulty out of their increased resources. The wide prevalence of malaria in this Presidency and its baneful effects on the people have long been recognised, and the importance of taking adequate measures for the prevention and cure of this disease cannot be overestimated. The Governor in Council trusts that District Boards will realize the pressing necessity of bringing within the reach of the people a mode of treatment pronounced to be effective after continued research by competent persons.

3. I am to request that you will communicate the wishes of Government in this matter to all District Boards within your division. A copy of the Circular No. 31, dated 20th August 1913, issued by the Inspector-General of Civil Hospitals to all Civil Surgeons, is appended.

APPENDIX.

Circular No. 31, dated Calcutta, the 20th August, 1913.

The Malaria Committee have brought to the notice of Government that according to the result of careful investigations made by the two Malaria Research Officers employed in this province, the amount of quinine given to patients who apply for treatment at Government dispensaries is entirely inadequate to cure even mild cases of malarial fever. This statement is supported by figures for various districts.

2. The Committee also state that the failure of the quinine given to relieve patients of their fever symptoms is one of the main reasons why quinine is looked upon with such disfavour by the people generally, and this is borne out by the fact that patent medicines, which contain large doses of quinine and are sold at a much higher price find a ready market. This attitude of the public in regard to the efficacy of quinine is a great drawback to attempts to improve the general health of certain tracts of the country, and in the opinion of Government steps should be taken to remove it at once.

3. Although there are many problems which have yet to be decided on the subject of the treatment of malaria with quinine, there can be no doubt whatever that no good results are likely to be obtained by administration of inadequate doses of the drug. Even mild cases require about 80 grains, and more malignant cases considerably larger quantities, before recovery can be expected. While Government have no wish to interfere with the treatment of patients by medical officers, they desire it to be distinctly understood that all patients suffering from simple uncomplicated malaria should receive an adequate amount of quinine sufficient to cure them of the malady. In their case the amount of quinine to be given should ordinarily be never less than 80 grains or one "treatment" of quinine. The "treatments" which consist of 20 tabloids each of 4 grains in test tubes will be supplied to dis-

pensaries. These tubes should under no consideration be opened, and at least a whole test tube should be given to each patient who requires treatment by quinine. In cases of children 80 grains of quinine are unnecessary, but even in these cases a full "treatment" should be given with suitable instructions and the parents may be allowed to retain what is not required of the "treatment" for future use. I am to add that these instructions do not in any way interfere with the discretion of the medical officers to make use of a diaphoretic or a saline purgative as well as quinine. Separate Register should be kept for malarial cases.

Some Recent Publications.

LIVE STOCK OF THE FARM. By many specialists under the Editorship of Prof. C. Bryner Jones. Vol. II. *Cattle*. The Gresham Publishing Company. Price 7s. net.

[A volume of exceptional value.]

FIGHTING THE FLY PERIL. By C. F. Plowman and W. F. Dearden Wiles, Fisher Unwin. Price 1s. net.

[A very useful handbook of instruction.]

The principles of Fruit growing: With applications to practice. By L. H. Bailey. The Macmillan Company. Price \$ 1.75.

LONDON COUNTY COUNCIL. Comparative Municipal statistics: 1912-13, Vol. 1. P. S. King. Price 5s.

REFUSE DISPOSAL. By E. R. Mathews. A practical manual for Municipal Engineers, Members of Local Authorities, etc.



The Local

Self-Government Gazette.

Vol. I, No. 10.]

OCTOBER

[1915

Slums in the City of Bombay.

THERE are in Bombay large areas covered with the foul slums which called into existence the City Improvement Trust. It is not uncommon to find a continuous area of buildings each occupying practically the whole site on which it stands. Each building may be surrounded almost entirely by a dark narrow gully which, in the absence of any possibility of installing a proper drainage system, is an open drain containing the waste water used for domestic purposes, and defiled also with urine, with *excreta* overflowing from the privy baskets, and with all kinds of refuse thrown out of windows. Except for some small dirty interior *chauks*, these gullies may constitute the only access of light and air to the rooms in the buildings. Most of the rooms have obviously no proper supply of light and air and many of them are dark hovels which no breath of fresh air ever reaches. Often such small windows as look out on the narrow passages cannot be opened at all because of the foulness of the gullies and because of the fear that rubbish and filth thrown out of windows will enter the rooms. But lack of light and air is by no means the only fault of such dwellings. There is also the very imperfect drainage which results from the crowded nature of the sites, and the dampness of soil due to this insufficient drainage and other causes. Dwelling rooms are too small and too low. Yards and compounds are not decently paved. Proper arrangements for disposal of refuse are absent.

The trouble is not merely that these conditions exist but that some of them are in danger of being reproduced in undeveloped land. To take a hypothetical and not altogether impractical case showing what can be done under the rules applicable in Bombay at present, suppose an owner has a site abutting on a 26-foot street and desires to build thereon as big a chawl as he can. He first gives notice of an intention to erect a dwelling house, not being a chawl, 22 feet high. On each floor he builds in front a room 30 feet deep by 10 feet wide, three 10×10-foot rooms behind it, and privies in the rear, the depth of the plot and building being, say, 70 feet. The front rooms are lighted from the street and the rear rooms from one side. On the side on which the windows of the rear rooms abut there is a blank wall 70 feet high running 70 feet back on the boundary of the site. Under the by-laws, he must keep a 2-foot open space along the blank wall, but this open space is not required to extend as far as the street and it accordingly runs only along the rooms which have windows at the side.

Subsequently the owner adds 22 feet to the height of the building. Any part of the building in front which is higher than 39 feet above the street must be set back in accordance with the 45° rule prescribed in the Act. Also the addition must be set back 2 feet at the side. Similar successive additions may be made, with similar set-backs at the side, the height of the rear part of the building rising to 70 feet. The same conditions obtain on the other side of the building, and a corridor runs down the middle. The back of the building will be a blank wall containing no windows. On the site at the rear of the building there may be erected another high building surrounded either by a similar narrow gully, except where there is a blank wall on the boundary of its site, but unrestricted in height (except to the maximum of 70 feet) as not abutting on a street.

It will be clear that all the rooms in the building first described, except those at the top, will be very insufficiently

lighted and ventilated, the rear rooms because they abut on the narrow dark gully, and the front rooms because they are very deep. A building 39 feet high (or perhaps higher if it is old) on the opposite side of the 26-foot street may shut off light from the rooms on the lower floors.

But this is not the worst that can be done. Each long dark 30-foot room may be split up by partitions into three rooms, each of which may be let separately, the two inner rooms having no windows at all. Further, the owner, who has given no indication that he is building a chawl, may proceed to let the whole house in one-room or two-room tenements. If the owner had disclosed his whole intention at first, he would have been required to leave a 10-foot instead of a 4-foot open space along the side. The conditions will be no better if, as is now commonly done, the rooms are constructed so as to depend for their light upon an interior *chawk* and not upon any exterior open space.

It is gratifying to note that there are now under consideration amendments of the Act and by-laws which will effect an improvement.

The question of additions to old buildings needs special treatment. Mr. Orr, Chairman of the Improvement Trust, has prepared some models illustrating how actual buildings in which rooms originally enjoying a sufficiency of light and air had been plunged into gloom by the adding of storeys and extensions from time to time. In the hypothetical building dealt with above, the 2-foot side open space, inadequate as it was when the building was only 22 feet high, was rendered still less adequate when the additions were made. It should be impossible under the by-laws to add to the height of a building in such a way as to produce this effect. It should also be possible, whenever an important alteration or addition is made, to take the opportunity to bring the whole building into conformity with all the latest sanitary requirements of the by-laws.

It should further be impossible for an owner to pile up buildings so near the boundary of his land that an owner of a contiguous site who wants to build, or add to a building, on that site cannot provide a sufficiency of light and air for the windows abutting on that side without sacrificing an inordinately large proportion of the site. What is wanted *inter alia* is some limitation of the proportion of a site which may be covered with buildings, the maximum proportion being in some kind of inverse ratio to the height of the buildings. There ought to be a rule providing in so many words that no addition may be made to a building which reduces below the requirements of the existing by-laws the supply of air and light to any part of the building. Section 391 of the Calcutta Municipal Act forbids, with certain exceptions, the making of any alteration of, or addition to, any building in such a manner that, when so altered or added to, the building will, by reason of such alteration or addition, not be in conformity with certain provisions of the Act and by-laws.

The 63½° rule of the Improvement Trust is a mere minimum and does not alone provide sufficient open space around buildings on undeveloped sites. It is doubtless all that can be expected in parts of the City where land values are high. But in other parts a much larger proportion of each plot should be retained as open space. So long as it is permissible, as under the existing by-laws, to cover almost the whole of a site with buildings, and so long as rooms in the congested areas formed by such buildings are not much less desired by the public than rooms with a plentiful supply of light and air, the value of undeveloped land which is likely soon to be built on rises rapidly because of the large number of rent-producing rooms which can be crowded on a plot. If by-laws reduce the permissible number of rooms the speed at which the value rises will be checked. But the enhancement in land values will then be extended further afield, so that more owners will realize the increment due to development. When the value is kept low it will be practicable to enforce such by-laws as

would provide ample open space round buildings. The value of land under such circumstances would be better secured than now, because the advance of sanitary standards would be anticipated and because the conditions under which property loses value owing to the formation of slums close at hand would be avoided. Incidentally, sites required for public purposes would then be available at low cost. Probably the most satisfactory method would be to prescribe by law the maximum proportion of a building site which may be covered with buildings from place to place in undeveloped areas in Bombay and outside, in addition of course to such other restrictions as may be necessary.

The treatment of existing slum areas next claims attention. The method of wholesale demolition on a large scale has been found in Bombay, as in England, to involve prohibitive expenditure. The estimated net loss on Improvement Schemes dealing in this method with the congested area of Bombay is from 9 to 17 crores, a sum which the Improvement Trust could not possibly provide. Moreover, this method also encourages owners to neglect their property in order that it may be bought up at public expense. We should avoid any method which thus rewards unscrupulous persons.

In order to make improvement practicable the owner thus must, as in England, be made to co-operate. This view is no new one in the City of Bombay, for under the Municipal Act the use of a building for dwelling can be prohibited when it is unfit for human habitation. This provision of the law has seldom been used because the view taken in practice has been that thereunder it is illegal to condemn part of a building; either the whole or nothing must be dealt with. The Corporation is thus helpless in respect of big insanitary buildings which happen to contain at least one room fit for human habitation. The necessary amendment of the Act has been agreed to by the Corporation.

It is essential that owners of slums should be made to co-operate. In this method alone does hope lie. After all, from one point of view it is quite right that the owner should

cease to regard as a legitimate source of profit the vile dens which now earn him an income. Unless the slums of Bombay, which are among the worst in the world, are to continue to be a reproach to the City, this policy of obtaining the co-operation of owners will have to be vigorously taken up. It has been argued that to do so amounts to spoliation and that house-owners ought not to be singled out to bear the brunt of town improvement. But on the other hand it must not be overlooked that it is often true that these insanitary rooms are due to the fact that the land has been unduly crowded with buildings and has thus enabled the owner to reap a rich harvest from his property. It may be said that he has in numerous instances had plenty of time to write off all the capital expenditure incurred by him on land and building and that on sound business principles he would have done so long ago. What happens is that some owners get every rupee they can out of their property and put nothing in. In other words, they live on their capital and are speculators in human misery. Moreover, to depreciate the market value of insanitary property is surely better and wiser than the alternative of depreciating our national human assets, the tenants.*

But no headstrong policy of demolition at the expense of owners should be followed. Any effort to undo in a year or two the evil results of generations of development would be doomed to failure. When part of a house has to be condemned, and improvement can be effected by rendering quite valueless (whether as godowns or otherwise) a large proportion of its rent-producing rooms, the owner can hardly be expected to bear the whole loss incurred by closing. In estimating the owner's share in bearing the cost of improvement, the proportional loss of income from the house must be taken into account, and not merely the degree of insanitariness of particular rooms. A building constructed in full accordance with the by-laws must after all be considered a legitimate investment and one

* Nettlefold : Practical Housing.

which in meeting the need for house accommodation has rendered the public an important service. One is not free to urge, at any rate with the same force as in England, that the builder can be made to suffer because he should have put fewer rooms on his plot than the by-laws permit. For in England everybody likes a garden at the back of his house, and in front too if he can get it, whereas in Bombay even the meagre requirements of the by-laws are in advance of the demands of the poorer classes. Also some owners of bad houses may be poor, and everything must be done to mitigate hardship by encouraging negotiation with them in order to alleviate the burden. We may even hope that, as in Birmingham, where this policy of closing bad dwellings has been carried out with marked success, owners will voluntarily come and ask for Municipal advice as to how they can bring their property up to the minimum standard.

Some demolition of whole obstructive buildings there must be, where this is the only method of allowing access of light and air to the surrounding structures. In such cases it is only fair that owners of the surrounding structures should bear some of the expense. An English precedent is to be found in the Housing of the Working Classes Act, 1890, in Section 38 (8), which is as follows:—

“Where in the opinion of the arbitrator the demolition of an obstructive building adds to the value of such other buildings as are in that behalf mentioned in this section, the arbitrator shall apportion so much of the compensation to be paid for the demolition of the obstructive building as may be equal to the increase in value of the other buildings amongst such other buildings respectively, and the amount apportioned to each such other building in respect of its increase in value by reason of the demolition of such obstructive building shall be deemed to be private improvement expenses incurred by the local authority in respect of such building, and such local authority may, for the purpose of defraying such expenses, make and levy improvement rates on the occupier of such premises accordingly; and the provisions of the Public Health Acts relating to private improvement expenses and to private improvements

rates, shall so far as circumstances admit, apply accordingly in the same manner as if such provisions were incorporated in this Act."

Practical proposals showing how gradual steps may be adopted for achieving the requisite improvements have been put forward. But all this depends on the hypothesis that a sanitary, well-ventilated room has a higher market value than a dark insanitary one. The public opinion of the inhabitants of one-room tenements does not definitely enough create this higher value. External assistance must therefore be rendered by condemning the worst rooms in the neighbourhood, as part of the only practicable method of slum improvement with the help of owners. The betterment of surrounding buildings due to removal of an obstructive building might in some cases be set off against the loss.

A very important proposal has been made to relax section 49 of the Land Acquisition Act in such a way that parts of buildings may be acquired without the owners being able to insist that the whole should be taken. This method is particularly useful where two continuous lines of buildings fronting on parallel streets are separated only by a narrow gully which does not enable sufficient light or air to reach the rear rooms. A strip along each side of the gully can then be acquired, with the result that all the remaining rooms are in a position to receive proper light and ventilation, and it becomes possible to lay sewers in the broadened rear space and to convert privies into W.C.'s. The cost of the acquisition should here be reduced by levying betterment in respect of the rooms which are improved. In England this can be done under Section 38 (7) of the Housing of the Working Classes Act, 1890, which is as follows:—

"Where the local authority is empowered to purchase land compulsorily, it shall not be competent for the owner of a house or manufactory to insist on his entire holding being taken, where part only is proposed to be taken as obstructive, and where such part proposed to be taken can, in the opinion of the arbitrator to whom

the question of disputed compensation is submitted, be severed from the remainder of the house or manufactory without material detriment thereto, provided that compensation may be awarded in respect of the severance of the part so proposed to be taken in addition to the value of that part."

It would be wrong to overlook one particular aspect of this subject of Bombay slum improvement and prevention, viz., that the demands of those responsible for the public health are in advance of the wants of the slum dwellers. The latter are for the most part content with their present hideous conditions and when the Improvement Trust can offer them good rooms close at hand they often do not trouble to vacate dark insanitary rooms. It is just this contentedness with their present accommodation that renders improvement so expensive. So long as there is a big demand for the undesirable dwellings which sanitarians wish to abolish, public bodies will find the cost of improvement to be enormous.

What after all is wanted is the creation, in the minds of the slum dwellers, of a desire for something better than existing conditions. It is necessary to alter the habits and tastes of these people until they are content only with good sanitary houses surrounded by adequate open spaces. This task of educating the people is certainly no less difficult than that of finding funds for the improvements which are immediately necessary.

There is one method by which a desire for better conditions may be engendered. The Agent of the G.I.P. Railway has publicly favoured a proposal to house at some distance outside Bombay the 7,000 men employed in the workshops of the G.I.P. Railway and has said that it would be quite reasonable to ask the Railway Companies to build chawls for their labourers at some distance outside Bombay. The suggestion is that Government, public bodies, and the Railways, jointly or separately, should encourage the migration of the poor outside the City by erecting model dwellings for their *employés* of the peon and coolie class in the north of the Island and

Salsette, where land is cheap and where therefore ample open space around dwellings can in practice be provided. One great obstacle in the way of migration to the suburbs is the cost of transit. Government and the public bodies might therefore provide very cheap tickets by train or tram. Considerable sums are now spent on house allowances, and it should not be considered out of the question that some additional expenditure should, if necessary, be incurred in order to encourage a movement of the poor to the suburbs. For the class of people who live in two-room tenements, and many of whom, being of the clerk class, feel severely the pressure of high house-rent, Government encouragement might take the form of granting long-term loans at low interest to Co-operative Housing Societies.

It has been the experience of Europe that as people acquire the habit of living in suburbs, the value of dwellings at and near the centre falls. This is what would gradually happen under similar circumstances in Bombay and the problem of finding money to improve valuable slum property would be enormously simplified. Money spent on encouraging migration could be set off against this reduction of expenditure.

If congested building in the suburbs is prohibited at an early stage, then, as has been suggested above, land values will not rise as they otherwise would, the due restriction of the number of houses per acre will be a practicable measure, and no new slums will be created. In the encouragement of this orderly development of the suburbs lies the best hope for the future. While existing congested areas must by no means be neglected, to promote migration northwards is to go to the root of the slum problem.

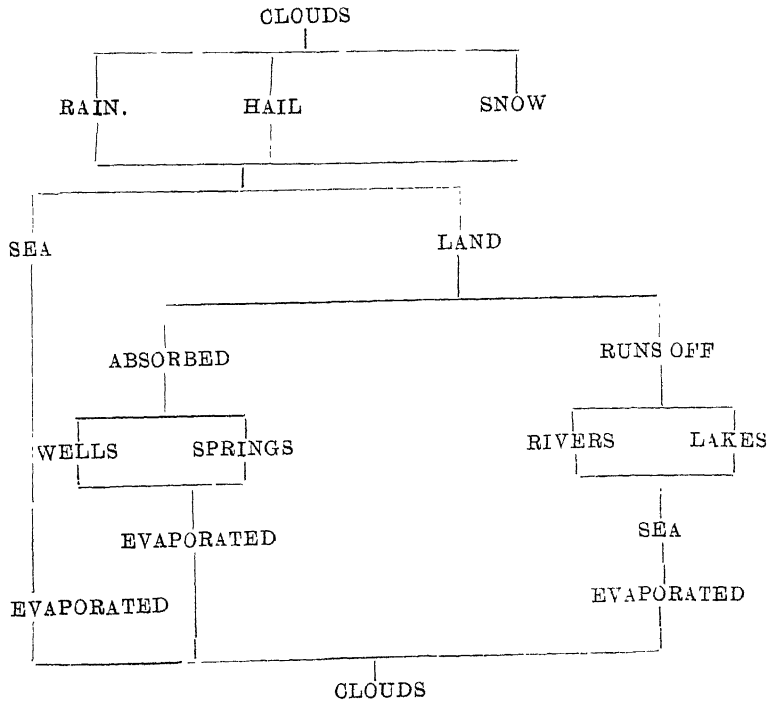


Public Water Supplies.*

[By J. W. MADELEY, M.A., M. INST. C.E., M. AM. SOC. C. E.,
SPECIAL ENGINEER, CORPORATION OF MADRAS.]

The use of water for public supplies—for drinking, washing, cooking and the like—is only part of a series of cycles through which water is continually passing owing to the beneficent action of the sun. This may be indicated as follows:—

CYCLES IN HISTORY OF WATER.



* Being a lecture delivered at Palamcottah by invitation of the District Board of Tinnevely and the Municipalities of Tinnevely, Palamcottah and Tuticorin.

2. The history of water is then a continual series of cycles. It descends to the earth from clouds in the form of rain, snow and hail. Part of it falls into the sea direct, the remainder falls on to the land and—except for a small portion that is evaporated—makes its way to the sea either underground or over the surface of the land. From the sea the water is again drawn up to form clouds, again to descend on to the earth in the form of rain, snow and hail and so the cycles continue.

History of water, etc.
series of cycles.

That portion which reaches the sea is of little service for water supply purposes, though sea water is sometimes used for road watering, baths, sewer flushing and other purposes. Of the water that falls on to the land, part is evaporated, part is absorbed and part runs over the surface. Both that portion which is absorbed, and that portion which runs over the surface, gradually make their way to the sea, but in so doing, the water may be utilised for purposes of maintaining life, for irrigating land, for drinking and ablution, for cooking, and for manufacturing purposes. In all these life processes and manufactures where water is used, it becomes polluted, but when it reaches the sea, it is purified by the natural agency of the sun, the pure water being drawn up as vapour to form clouds, while the impurities remain behind. The clouds again condense as rain, and so the cycle is renewed, and the same water is used over and over again. Without this wonderful process of nature, pure water supplies, as we know them, would be impossible.

3. We are to-day concerned with that portion of the history of water which deals with its utilisation by mankind. Water is most conveniently obtained either as it descends on to the earth as rain, or as it flows towards the sea, either underground, or over the surface of the earth in streams and rivers. Rainwater is stored and used in many communities, but the bulk of water supplies are obtained from underground and above-ground

Utilisation of water.

flows. An intermediate source of water supply is provided by springs.

4. Springs are formed where, for any reason, the ground water is caused to overflow upon the surface. This overflow may result from the following causes:—

(1) The outcrop of impervious stratum overlaid by a porous bed. This is the most important source of springs, and springs of this class furnish supplies to some large cities in Europe, amongst which may be instanced Vienna, the capital of Austria. I myself have utilised this class of spring for the water supply of a small town.

(2) Where a water-bearing stratum is covered by an impervious one, water may find its way as a spring to the surface through a fault or weak place in the impervious layer.

(3) Other springs occur in which porous beds in the vicinity of the spring are neither over-laid nor immediately under-laid by impervious strata. These springs may be regarded as overflows of the ground water.

Spring water is usually regarded as being the purest and most suitable for domestic purposes, because in the first place, the water, after reaching the earth, is very rapidly absorbed and has therefore little opportunity to become polluted, and, in the second place, any pollution there may be is removed by the filtering action of the porous strata through which the water percolates.

5. Water that soaks into the earth may be obtained by sinking wells until the water surface is reached. Wells are of two kinds—shallow and deep.

Shallow wells are those sunk in a porous sub-soil. These wells are very liable to pollution, and in towns, water obtained from such wells should not be used for drinking without previous boiling.

Deep wells are those which pierce through one or more impervious strata, and tap a lower water-bearing stratum. They usually give excellent water. Such wells have been sunk under the supervision of the Director of Industries in the neighbourhood of Madras and excellent water, rising to within a few feet of ground surface, has been obtained, whereas the water from adjacent shallow wells is unfit for drinking purposes.

Shallow wells are so important a source of water supply in the plains of India, that a few words may be said about them, and, though in closely inhabited areas they are always open to suspicion, none the less, in the present state of water supply in this country, it is necessary that they should be utilised to a very large extent. In order to diminish the danger of using water from shallow wells, the following precautions should be taken :—

(1) In the case of a new well, the site selected should be free from sub-soil pollution, and in any case, an acre round the well should be preserved free from pollution. The site should be as far as possible from sources of contamination, and on the upstream side of them with respect to the underground flow.

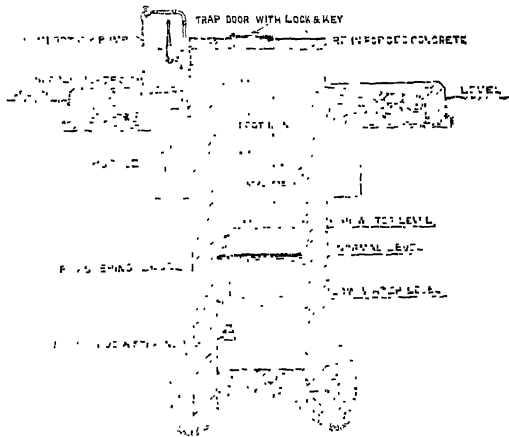
(2) A parapet wall about 14 in. thick should be built to a height of 3 ft. 6 in. above ground all round the well. The object of this is to prevent flood water, splashings, and dirt, from getting into the well. If the well is uncovered, the top of the parapet should be sloped off, so that those drawing water cannot stand on the top or place chatties there.

(3) Two or more pulleys or preferably a pump should be attached to the parapet wall to enable water to be drawn up readily.

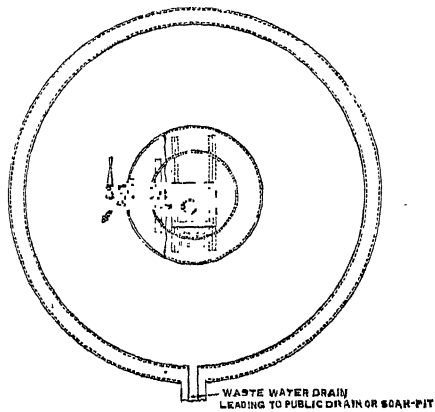
(4) The well should be surrounded by a masonry platform at least 5 ft. wide. The platform should be provided with a drain leading to a distance of at least $1\frac{1}{2}$ times the depth of the well, and if possible, not less than 150 feet. It is preferable to have the ground covered with an impervious pavement for a radius of 30 ft. from the well in thickly-populated areas.

SHALLOW WELL
SHOWING CONSTRUCTION TO PREVENT CONTAMINATION

SECTION



PLAN



(5) If possible, the well should be covered to prevent leaves, animals, rubbish, etc., falling into it, and to obviate mosquito breeding, a concrete cover with a small locked trap door is the best. If it is impracticable to cover any particular well, it may be stocked with fish of a species that eats mosquito larvæ.

(6) Every public well should be provided with one or more pumps, but if buckets are used, they and the ropes by which they are drawn up should be the property of the water authority. Persons drawing water from public wells should not be allowed to use their own chatties, as they are exceedingly liable to cause pollution of the water.

(7) The inside of every shallow well should be plastered with Portland Cement mortar from the top down to the lowest water-level, in order to prevent the entrance of polluted water from close to the surface.

(8) Clay puddle should be placed against the outside of the well wall for a depth of six feet to ensure that polluted water shall not make its way down the outside and so into the well.

(9) Trees should not be allowed to overhang open wells as they cause pollution by decay of leaves, etc.

(10) The well should be regularly cleaned out and treated with permanganate of potash. The illustration on the opposite page shows a suitable and simple type of well head using a pump.

5. The Infiltration Gallery is a development of the well.

Infiltration Galleries. When a considerable supply is required,

a number of wells may be sunk and linked together by pipes. In the case of a river bed consisting of highly porous materials, to obtain a maximum amount of water by means of wells during those months when there is no flow of water in the river above ground, it would be necessary to

construct the wells touching one another or very nearly so. In such a case, an Infiltration Gallery would be much more economical.

An Infiltration Gallery is constructed by excavating an open trench usually across or along a river bed down to the dry weather water-level. Below this level, it is carried down vertically, the sides being supported by timber, to a depth of some 8 feet, with a width of about 8 feet. On the bottom of the trench is laid stone $\frac{3}{4}$ inch in size to a depth of 6 inches, on this 6-inches of stone $1\frac{1}{2}$ inches in size. On these layers of broken stone are laid 1, 2, 3 or 4 lines of open jointed stoneware pipes with a slight fall to one end. The trench is then filled with stone varying from 3 inches to $\frac{3}{4}$ inch in size, the largest stone being immediately round the pipes and the small stone further away. Above the stone is placed a layer of about 2 ft. of coarse sand and above this again the ordinary river bed sand. At the lower end of the Infiltration Gallery, the stoneware pipes end in a well from which the water is pumped.

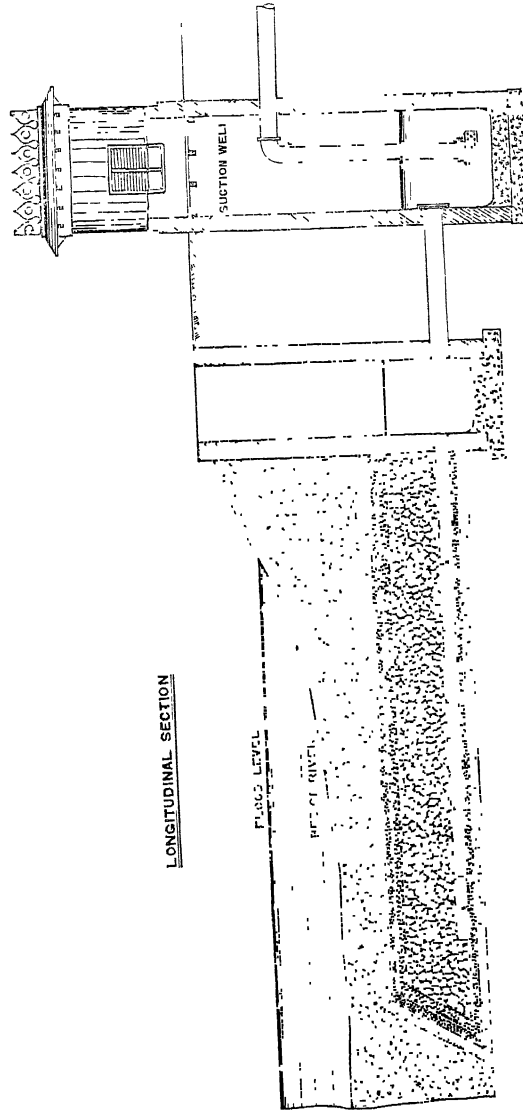
To prevent sand getting to the well, and thence into the pumps, it is common practice to place a silt pit in front of the well in which the sand settles and from which it can be removed.

The accompanying illustration shows a typical Infiltration Gallery. Somewhat similar to this is the Conjeeveram Gallery* which has now been working for 15 years. It is 560 ft. long across the Vegavathi river; the trench is 8 ft. wide and the broken stone filling $7\frac{1}{2}$ ft. high. At the bottom of the trench are four rows of 9 in. stoneware pipes leading to the suction well. The cost of Infiltration Galleries in the Madras Presidency is stated to be about Rs. 30 per lin. ft. Where the sand is fine, the Infiltration Gallery must not be over-worked, otherwise, there is a likelihood of the sand being drawn into the Infiltration Gallery and blocking it up. In such fine sand, wells would generally be preferable, as a well can be cleaned readily, should silt accumulate in it.

* Proceedings of All-India Sanitary Conference, 1912.

TYPICAL INFILTRATION GALLERY

LONGITUDINAL SECTION



6. Having considered the methods by which water that
Surface water. has been absorbed by the earth is made
available for use, we may now pass on to
that portion which flows over the surface in streams and rivers.
This "surface water" forms the principal source of supply
of most large communities. London, Manchester, Liverpool,
Glasgow, Birmingham, Paris, New York, Bombay, Calcutta,
Madras, in fact, nearly every large city, derives its supply from
surface waters.

The chief difficulty in utilising these supplies arises from
the fact that the quantity of water varies very much according
to the season of the year. For example, large volumes
of water flow down our South Indian rivers after the rains,
whereas in dry weather there is, in many of them, no flow at all.
It is therefore necessary to construct storage reservoirs or tanks
in which the flow after rain, can be stored for use during dry
weather. These reservoirs are formed by means of masonry
dams or earth bunds. In the Madras City supply, two large
tanks are formed by earth bunds, while Bombay uses a storage
reservoir formed by constructing a fine masonry dam across
the river Tansa. In other countries, Liverpool, Manchester,
Birmingham and New York may be mentioned as large cities,
whose storage reservoirs are formed by means of masonry
dams.

7. We must now say a word about the pollution of water.
Pollution. Water is the most universal solvent
known. It dissolves nearly all solids and
gases.

As a consequence, impurities are absorbed from the
atmosphere and from the ground through which water
percolates or over which it runs, and in some cases by direct
deposition in the water itself.

Pollution may be divided into two classes, namely
'mineral' pollution, and 'animal' pollution.

Mineral pollution is due to the dissolving action of water on minerals with which it comes in contact. This action sometime produces a poisonous water, but more often a water which we call "hard" or "brackish." *Hard water* is one which contains bicarbonate of lime and magnesia and sulphate of lime. These minerals render the water unsuitable for many purposes and, where this is the only description of water to be obtained, elaborate methods of "softening" are adopted. *Softening* is effected by precipitating the mineral salts, and subsequent filtration. Hard waters are generally obtained from lime stone; as, in the Madras Presidency, hard waters are rare, the process of softening is of little importance, and need not be dealt with any further.

Much more important to us is 'animal' pollution; for, as is well known, a number of diseases especially enteric and cholera may be carried by water. If the excreta of any animal suffering from one of these diseases is deposited in water, it may cause an epidemic amongst those who consume such water.

8. It is interesting to know that, as a result of investigation, the Rivers Pollution Commission issued the following list as the order of fitness of water for domestic purposes:—

Wholesome.	{ 1. Spring. 2. Deep well.	} Very palatable.
Suspicious.	{ 3. Upland surface. 4. Storage rain.	} Moderately palatable.
Dangerous.	{ 5. Surface (from cultivated land.) 6. River sewage polluted. 7. Shallow well.	} Palatable.

It is important to bear this order in mind and to remember that shallow wells (and tanks are only large shallow wells) are the lowest in the list, that is to say, they are the most dangerous.

The shallow well water and tank water used in so many Indian Towns is very dangerous, for a constant stream of sullage water is continually running through the porous surface soil to pollute the sub-soil water.

9. The methods of purifying water almost universally adopted are :—

- (1) Storage and
- (2) Filtration.

The storage of water in open reservoirs exposed to the sun for about a month, has been found to result in quite an extraordinarily large amount of purification, but, in order to make perfectly sure, it is highly desirable that any water which is at all suspicious should also be passed through sand filters.

A *Sand Filter* consists essentially of a masonry chamber containing fairly fine sand. The water to be purified is admitted above the top of the sand, and passed downwards through the sand, by which process its impurities are removed.

The “filter bed,” or chamber containing the sand, may be of various sizes, a convenient size being 200 feet long by 100 feet wide. The depth of sand through which the water is passed varies, but 3 feet may be regarded as a normal depth.

The water in passing through the bed of sand, is purified by a two-fold process, viz :—

- (1) The mechanical removal of the larger suspended matter.
- (2) The removal of bacteria.

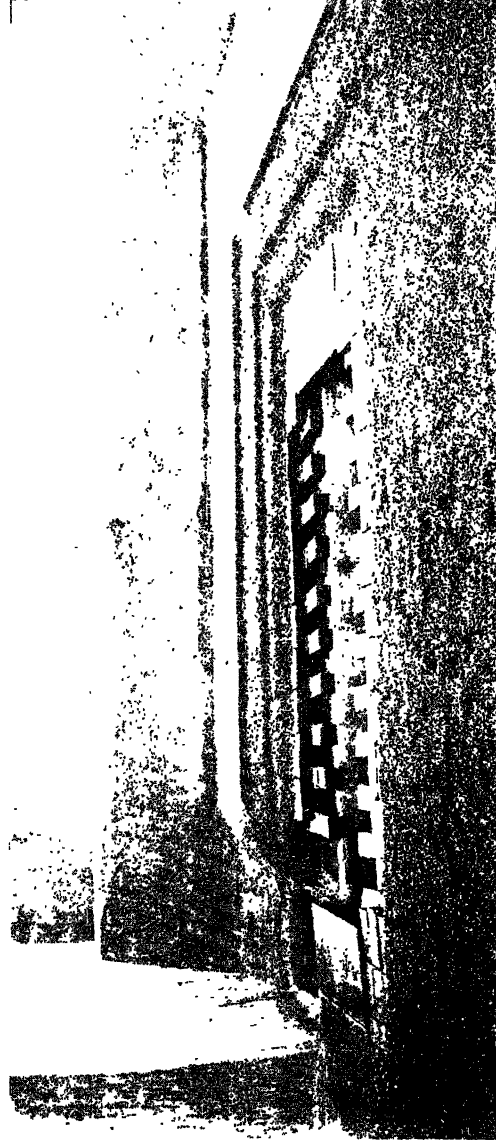
The *mechanical action* removes all solid particles that are unable to pass through the channels in the sand grains. By this action a turbid water is rendered clear, the suspended mineral and organic matters being removed as by a strainer.

The *removal of bacteria* is due to the formation of a filtering skin, which forms on the surface of sand filters after they have been in operation for a period ranging from 24 hours upwards. This skin is produced by algæ and other small organisms, which coat the sand grains near the surface with a gelatinous film. It is this gelatinous film that removes the microscopically small organisms in the water and thus purifies it bacterially.

10. In the case of water supplies to large villages, towns and cities, the conveyance of water from
Conveyance of water. the source to the consumer generally involves large and expensive works. For example, the Birmingham water-supply is carried 70 miles from the storage reservoirs in Wales to the service reservoir on the outskirts of the city. Similarly, water-supplies to nearly all large towns such as Manchester, Liverpool, Glasgow, New York and Bombay are all carried long distances. The means of conveyance, where the water-supply is not very great, is usually provided by cast iron pipes. In the case of large water-supplies, however, brick-work or concrete aqueducts are used, as being much cheaper than pipes. In such cases, cast-iron and steel pipes are only used when crossing depressions, where the pressure would be considerable. The conduit constructed in connection with the New Madras City water-supply is seven miles long and has been conveying 19 million gallons per day from the Red Hills Station tank to the Filter Beds in the Kilpauk Division of Madras.

(To be continued.)

A SECTION OF ONE OF THE FILTERS RECENTLY BROUGHT
INTO USE IN THE NEW MADRAS CORPORATION WATER WORKS.



The fine sand, 28 inches thick, is seen to be supported on 2 inches of coarse sand, which rests on a 2-inch layer of $\frac{3}{8}$ -inch stone, under which is 2 inches of $\frac{1}{4}$ -inch stone. Below the stone are the brick collecting drains leading to the main drain, which is sunk below the filter floor.

The raw water is admitted at the top, is purified by passing through the sand, and leaves the filter by means of the main drain.

Rural Sanitation.*

[By DR. M. SRINIVASA RAO, M.A., M.D., D.P.H., B. Sc., F.C.S.,
DIRECTOR OF PUBLIC HEALTH INSTITUTE, MYSORE.]

SANITATION in rural areas has not received the attention that the importance of the subject deserves. In 1898 the Mysore Government passed the Village Sanitary Regulation and framed rules for the improvement of sanitation in the villages. But these rules are more honoured in their breach than in their observance. This is due to the fact that for the administration and execution of the rules the Patel is held primarily responsible. Knowing what multifarious functions the Patel of a village has to discharge, it is not surprising that sanitation has received but scant attention at his hands. Though seventeen years have passed since the formation of the rules the Government have not thought fit to take into consideration the promised appointment of "Village Sanitary Committees". But at the present day this is hardly a matter for regret, inasmuch as "Village Improvement Committees" have been or are being formed in most of the villages in the Province and the question of entrusting village sanitation to these committees is a comparatively simple one.

Rural sanitation is mainly concerned with (1) the provision of good drinking water, (2) prevention of epidemics, (3) removal of filth and manure, (4) registration of vital statistics, and (5) attention to vaccination. In all these respects the exertions of a committee are likely to yield more fruitful results than the efforts of the Patel however energetic he may be.

In many villages especially in the Malnad, the source of water-supply is a "hondas" or a step-well. It is no doubt easier for people to get water from these but the chances of the water being polluted are far greater than when the supply comes from a draw-well. Therefore, if there is no draw-well in a village, the committee should endeavour to get one or

* Reprinted from the *Mysore Economic Journal*.

more sunk. The people in most cases are willing to offer their manual labour for doing the earthwork and the committee can apply to the "Village Improvement Fund" for a contribution for revetting the well with stone and providing a pulley.

There is hardly a village in the Mysore Province, excepting parts of Malnad, which has not sometime or other been visited by cholera. The frontier villages are more exposed to the danger than the more interior ones. People returning from places of pilgrimage or from large fairs and jattras bring the infection with them and leave it in all the villages through which they pass. If the source of drinking water is protected from pollution by the travellers many lives could be saved. The only way in which the drinking water could be protected is by having draw-wells and fitting them with pumps. It is hopeless to expect to protect the "hondas" or step-wells. It is open to any way-fairer to go to a step-well, dip his dirty feet into the water, wash himself and his clothes and thus infect the water, if he happens to be carrying the disease germs on his person. By having draw-wells and fitting them with pumps not only would ravages of cholera be minimised but other water-borne diseases such as typhoid and allied fevers, dysentery and diarrhoea, tend to disappear.

The first essential for the prevention of epidemics in villages is the notification of the first case at the earliest possible moment to the Revenue and Sanitary Officers. It is very rare indeed for this information to reach the Amildar in time for any useful preventive measure being taken by the Sanitary Officers.

The Patel either wilfully or through negligence omits to report the first case and allows the disease to spread. This state of affairs can be remedied to some extent if this duty of reporting infectious diseases is entrusted to the Village Improvement Committee of which the Patel is a member.

Fortunately in the case of plague, villagers have learnt from bitter experience, the expediency of removing to camps outside infected localities. This camping out is generally done on their own initiative. With regard to cholera and small-pox the case is different as these diseases are still attributed to the visits of deities who are to be propitiated and not escaped from.

Removal of filth and manure to places set apart for them beyond the outskirts of the villages, is very imperfectly done at present. Manure being valuable is stored in houses and in the backyards till the time comes for it to be removed direct to the fields. In many villages, the excuse is that the Government has not allotted any land for the storing of manure but such villages are becoming fewer and fewer every year. The Village Improvement Committee will certainly be able to do more towards inducing the villagers to store the manure on selected lands and thus render the villages themselves cleaner.

Registration of births and deaths is done perfunctorily at present by the Patel himself or with the assistance of the Shanbhog when he is illiterate. There is practically no check on the work of the Patel and thus the value of vital statistics which form the chief index of the health of the population, becomes greatly lessened. The Village Improvement Committee should supervise and verify the Patel's work which would then become more reliable.

Vaccination is the prophylactic measure against the fell disease small-pox. Here again the vaccinator is helpless without the aid of the Patel and other influential men of the village. In many places the failure of vaccination is due to the passive resistance offered by the people but this is more likely to yield to the persuasions of the members of the Village Improvement Committee than to the efforts of the Patel alone.

Thus we see that the Village Improvement Committees have a great future before them. But as in the case of every human agency they must consist of the right sort of men.

Great responsibility rests upon the Revenue Officers who nominate these members. The work of even the best of committees is likely to be unsatisfactory if they are not properly supervised by the Amildars, higher Revenue Officers and Officers of the Sanitary Department.

Another factor which has operated upon the unsatisfactory condition of rural sanitation is the paucity of funds. Money must be given with a more generous hand for works of a sanitary nature in rural areas. A fixed sum should be allotted every year for sinking of draw-wells and fitting them with pumps. The tendency of all departments to grow top-heavy must be specially guarded against in the Department of Public Health. To look after rural sanitation, more Sanitary Inspectors should be appointed. Each of them should have a small conservancy staff under him. Without this the Sanitary Inspector cannot possibly do any good work. For general cleansing and disinfection work the sweepers and scavengers are absolutely necessary. Their services would be most valuable during jattras and fairs and in time of epidemics. At other times they would be engaged in filling up hollows, pits and stagnant pools, cleaning the village sites and clearing rank vegetation. The District Sanitary Officers could demand their services whenever they have to do any anti-malarial or anti-cholera work. In their frequent tours they would see that the Sanitary Inspectors are keeping the menial staff employed in the performance of their legitimate duties.

The most important factor in improving rural sanitation is the spread of Elementary Education. Ignorance is often the greatest obstacle to the carrying out of sanitary reforms of even the simplest kind. The days of coercion have gone by and the most illiterate villager knows his rights and resents what he terms undue interference with them. The best ally of sanitation is therefore Education. Literate people take greater interest in their surroundings, feel proud of any praise bestowed upon their efforts to improve themselves and gladly co-operate with those people who have the knack of gaining

their confidence. Let the villager once come to trust the sanitary officer, then he will carry out at least a portion of what the latter tells him to do. If he is convinced that keeping manure heaps in houses tends to increase the breeding of flies and that the flies tend to spread diseases like cholera, dysentery, etc., he will realise the necessity of removing his heaps of manure to a less harmful locality and the example of a few will have a wonderful effect in making others do likewise. Literate villagers can see the importance of protecting water-supplies, of giving early information of infectious diseases, of registering births and deaths and in giving all facilities to the work of vaccination.

Lastly, too much stress cannot be laid on the value of research work in sanitation, either rural or urban. It is a mistake to suppose that research can be done only in laboratories. The Executive Officer can do as much and as valuable a work as the laboratory worker. To take one single instance for the intelligent application of anti-malarial measures researches must be made at each place along lines well known to trained sanitarians.

One does not need the prophetic mantle to say that at the present moment there is a most favourable conjunction of all requisite influences for an early sanitary salvation of the Mysore Province.

Town Planning in Poona.

[BY PROFESSOR H. G. LIMAYE, COUNCILLOR, POONA CITY
MUNICIPALITY.]

THE Town Planning Bill of the Government of Bombay was passed into law in January last and before the year is out, it has been applied to the City of Poona, the second capital of the Bombay Presidency. When the Bill was before the council the question was discussed as to whether the Government should have the power of extending the Act to such areas as they selected, or whether the different local

authorities should have the initiative and should move the Government to have the Act extended to them. According to the provisions of the Bill, the island of Salsette only was to come under its operation as soon as it was passed. As regards other areas a distinction was made between Bombay City and the moffussil. The Act was to be applied to Bombay only after a resolution to that effect had been passed by the Corporation of the City by an absolute majority of its members, while in regard to other areas Government had the power to do so. These provisions were retained in the Act. In regard to this and other matters, however, a general assurance was given by the President of the Council, H. E. Lord Willingdon, in his concluding remarks, "that Government will do all they possibly can to administer the Bill with absolute fairness, and I trust that we shall have the fullest co-operation of all honourable members and people of influence in their various districts to assist us in our endeavour." So far as Poona is concerned Government have kept their promise. The Poona City Municipality passed a resolution requesting Government to extend the Act to a portion of Poona City and Government complied with the request by issuing the necessary notification.

It is a wise step, indeed, that has been taken by the Poona City Municipality in regard to this matter. The City of Poona has been growing for some years past—and growing at a rapid rate too. Poona has never been a great manufacturing or commercial centre. Its importance is partly political and partly educational. It is the seat of the Government of the Presidency for four months, which brings to it a large surplus population during the season. But as an educational centre its greatness is ever on the increase. It maintains four first grade colleges, of which two are professional, and a number of high schools. During the last ten years the number of students in Poona has more than doubled. These educational facilities attract many families to Poona, who would otherwise not have cared to come here. There has also been observed a decided tendency in recent

years to leave the congested and insanitary parts of the old city and to move to the less densely populated parts of the city itself, or to the healthier suburb beyond the river. A number of houses are coming into existence in the suburb of Bhamburda, without any plan or system, without any idea of road development, and without any provision for sanitation. If the present arrangement—or rather the want of any—is allowed to continue for any length of time, this fine suburb would be rendered perhaps more insanitary than the worst parts of the city proper and a large outlay on improvement schemes would be required to make it useful for the natural extension of the city. The municipality, therefore, has not moved a day too soon to obtain the benefit of the Town Planning Act.

It is not, however, to be supposed that the Municipality has been unanimous in arriving at this decision. There was a substantial minority against the proposal and an attempt was made to get up a demonstration against the application of the Act. It is a matter for surprise that any body of responsible municipal councillors should have opposed the introduction of a measure which would make available to them the means of carrying through comprehensive schemes for new and undeveloped areas, and it is all the more surprising when it is remembered that the municipality has not been unmindful in the past of the needs and requirements of a new suburb. In one form or other the subject of the development of Bhamburda has been before the municipality for some years. Only a short time ago, a 'roads committee' was appointed for this area. Roads are not made without considerable expenditure and the Municipality must, therefore, be presumed to have been ready to incur it. The Municipality has also agreed to contribute the amount of one lakh of rupees towards the construction of a bridge across the river. One of the strongest arguments put forward in support of this proposal was that the bridge would give easy access to Bhamburda whose development would reduce, if not remove altogether, the

overcrowding and congestion within the city itself. About the same time another development scheme for a different area costing about four lakhs was sanctioned and had to be given up only because it was vetoed by Government. All these instances would go to show that the Municipality has been alive to the necessity of providing a decent residential suburb for the city and also of incurring a substantial expenditure on that account. Nothing has happened during the last year or two to so revolutionize its financial position as to bring it on the verge of bankruptcy and unable to bear the burden of any extra expenditure for one of its most urgent wants. The financial objections to the application of the Act cannot, therefore, be regarded as valid, but on them was placed their main reliance by the opponents of the proposal in the municipality. Besides, the question of finance does not arise at this early stage. It comes up and has to be seriously considered when the scheme is to be framed. Some preliminary expenses will be necessary. But the real cost of the scheme will depend upon a number of factors, the importance of which may very well be estimated by the members of a local authority, who can then frame a scheme which will suit their requirements and the expenses of which may not be altogether beyond their means. The actual area to be included in a scheme, the chances of its rapid development, the intensity of the likely demand for sites, the width of the roads, the cost of markets &c.—these are all points about which Municipal Councillors may very well be expected to be competent to judge and there is no reason why they should not be able to prepare a scheme within their means.

The benefits to be derived from the Town Planning Act are so many and so obvious that growing towns and cities should be anxious to have the Act applied to them as soon as possible. The first and foremost of these is that it enables local authorities to plan out a new area in process of development on comprehensive lines. It is a mistake to suppose that town planning schemes are good only for large cities or that

they provide for the comforts of the rich only. The greatness or the smallness of the town does not matter at all and a town planning scheme will do as much good to a small town as to a large one. In the same manner the interests of the poor are as much looked after as those of the rich. By setting apart different portions for residential purposes and for different classes of houses, flats and chawls, a good scheme secures the convenience of all and ensures that the amenities of life will be increased. Besides, the relief that it gives to congested areas is mainly for the benefit of the poor. Secondly, it prevents waste. The orthodox method of allowing buildings to spring up in new areas without any plan or system or arrangement, is too costly for these times. It means the allowing of insanitary, unhealthy and unsatisfactory conditions to develop and the incurring of heavy expenditure to cure the evil. The best plan is to prevent the growth of such conditions and this is what the Town Planning Act seeks to do. Another very important advantage is the relief that the general tax-payer obtains by having the burden of expenditure shifted on to the right shoulders. In the absence of the Town Planning Act the cost of the development of new areas has to be borne entirely by the general tax-payer, while the advantage derived from it is enjoyed very fully by the land-owner. That the difference between the agricultural value and the site value of a piece of land is very great, needs no demonstration. This rise in the price of land caused by its being utilized as building site goes into the pockets of the landlord who may have contributed nothing to make his land suitable for residential purposes. Here comes in the principle of the 'unearned increment' which has been enunciated long ago. The Bombay Town Planning Act enables the local authority to obtain from the land-owners up to 50% of this 'unearned increment.' This is the strongest financial argument in favour of the Act. The problem of dealing with areas in course of development may be put forward in a very simple way. It is evident that something will have to be spent by local author-

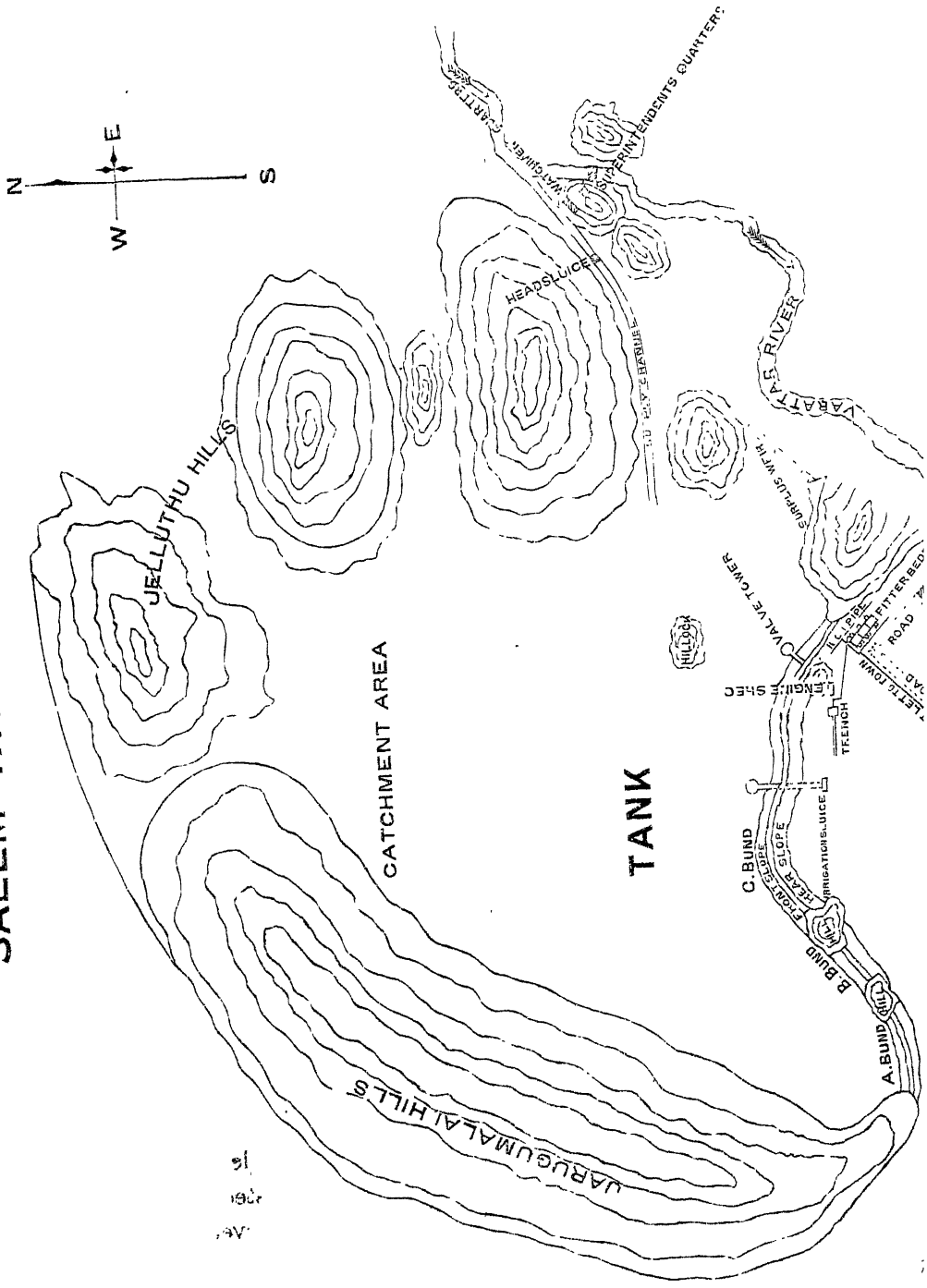
ities to provide for at least the most indispensable conveniences. The question is whether local authorities should undertake to make unsatisfactory arrangements for them mainly out of their general funds, or they should look to the future, make a comprehensive plan and provide for all needs at the expense of those who are to benefit thereby. It is not difficult to say what the answer should be.

The Salem Water Supply.

[By K. V. SUBBA RAO, B.A., B.L., MUNICIPAL
COUNCILLOR, SALEM.]

THE town of Salem gets its supply of water from a reservoir constructed near a village called Panamara-thupatti which is at a distance of seven miles from the town. The tank is in the hollow of three hills which surround it on the north, the east and the west. To the south is the bund of the tank which is a dam connecting the two ranges of the hills towards the east and the west. The ground to the east is high beyond the ranges of hills and a stream flowing through this locality called Varattar is the principal source of supply to the tank. Varattar is a jungle stream getting occasional floods during rains and the supply of water from it is, therefore, limited to mere flood or storm water, the bed of the stream becoming dry almost immediately after rains. There is an anicut across the stream fitted with steel shutters $7\frac{1}{2}$ ft. high and the supply channel that is cut higher up has a head sluice with similar shutters permitting only a maximum quantity of 6 ft. of water to flow in the channel. A mechanical arrangement starts an alarm through a telephone wire connected with the Superintendent's quarters situated near-by when the flood reaches the 7 ft. anicut. If the floods rise higher than 7 ft. the shutters are shifted so much as not to allow the floods to overflow the shutters. The shutter arrangement is expected to take away the sand and deposit of silt accumulated above the anicut and

SALEM WATER SUPPLY



no separate sand sluice is, therefore, provided. The head sluice shutters are intended to be put into action only when the tank is full so that water may completely be diverted back into the river. There is also a surplus weir to the east situated at a level of 27 ft. from the lowest depth of the tank that throws away surplus water into the feeder-river lower down the anicut.

The bund consists of 3 portions, A., B., C., connecting two small hillocks with the main line of hills on the east and the west. It consists mainly of earth except for the pavement of stones on the side of the tank and is made almost impervious by the building of a clay puddle-wall in its centre. The western side of the bund is planted with *ariali* grass which is expected to keep the bund from falling off.

There are two sluices on the bund. The one called Valve Tower Sluice lets out water for the Salem town. The other which is situated at a lower level is the irrigation sluice for the purpose of irrigating the lands lower down. The Valve Tower is fitted with mechanical arrangements for regulating the supply of water and the water flowing out therefrom is conducted to cisterns called filter beds that filter down the water through the process called "Jewel filter system." The filtered water is collected and sent to the town through steel pipes which supply the fountains in the town with water by the force of gravity.

The scheme cost the Municipality $10\frac{1}{2}$ lakhs of rupees out of which the Government gave half the amount as a free grant. The tank, its catchment area and the bund with the filter beds are a picturesque sight attracting several sight seers every day.

The system however has not been found to be quite successful. The maximum capacity of the tank is 27 ft.; but during the 5 years the scheme has been in working order, the supply of the tank was never more than 10 ft. The town could not, therefore, get house connections and water is

supplied solely at the public fountains, about 120 in number, distributed throughout the town. The uncertain nature of the supply has also necessitated the restriction to the supply of water between 6 to 10 a. m. During summer the tank gets absolutely dry and water is then pumped into the filter beds from infiltration galleries of trenches cut at a distance of about 100 ft. from the bund that collect the abundant supply of the subsoil water of the locality.

Defects have also been noticed in the construction of the anicut, the head sluice of the channel and in the width of the channel itself. The river is a jungle stream carrying storm water during rains only for a short time. The shutter arrangement system has made it possible to divert only 7 ft. of water and all the quantity beyond that height is wasted away during floods. The fixing of the maximum flow of 6 ft. down the shutters at the head sluice in the channel further narrows down the supply. The supply channel itself is much narrower than the rivulet and its widening may divert more water into the tank. The want of sand sluice at the anicut has caused the abnormal silting up of the river bed and the channel; and as high floods, that are rare, are alone the opportunity for working the anicut shutters, the silting problem has assumed a magnitude. The matter is under the consideration of the Council and it is hoped will find a solution ere long.

An increase of supply of water to the tank is also contemplated by the diversion of the contents of another jungle stream higher up into the Varattar and the proximity of the two streams makes it possible to undertake the scheme at a cost of Rs. 30,000.

The steel pipes carrying water into the town were found to be corroding and after examination by several experts, remedial measures have been adopted to preserve the life of the decaying pipes by treating the pipes with a chemical solution. The steel pipes were used in Salem as an

experiment but the experiment has proved a failure. When they go out of use it will be necessary to replace them by cast iron pipes that last longer.

The head-works consisting of the anicut and the filter beds are in charge of the Public Works Department and the Municipality is in charge of the water spread and the catchment area of the tank and the distribution system. In the town itself water is stored in a reservoir capable of supplying water to the town for two days with a view to meet emergencies arising out of the necessity for repairs to the main pipe line.

The Garden City: A Study in the Development of a Modern Town.*

IN this book, Mr. Purdom describes the origin and development of the Garden City of Letchworth—what the ideas were that brought it into being, how the details of the scheme were worked out and how capital was attracted, the lands were acquired and laid out, the settlers came and the growth of the new city was regulated. He “sets down something of the romance that belongs to what may be regarded as an adventurous endeavour to create a new thing in English life.”

The industrial era ushered in the flow of population into towns, overcrowding and all the evils that menace the vitality of the race. In the nineteenth century, the growth of cities was left to chance or to the mercy of speculators. A reaction set in and proposals for the formation of new cities free from these defects and suited to modern conditions were made. It is unnecessary to deal with earlier schemes for model industrial villages. Their culmination is to be found in the Garden city movement which was first elaborated by Mr. Ebenezer Howard in his book entitled “To-morrow: A peaceful path to real reform” published in 1898 and re-issued in 1902. The general idea soon found warm adherents.

* By C. B. Purdom, J. M. Dent & Sons, Ltd., London.

It must be premised that the idea of the promoters of the movement was to provide homes *not* for the poorest classes of the people but to wage-earners who could afford to pay moderate rents. Again, the aim was *not* to extend large towns by the formation of suburbs on the outskirts but to revive the *small* town under modern conditions—a town in which manufactures and industries will flourish side by side with agriculture and the evils of overcrowding will be avoided.

The Garden City of Letchworth was entirely the result of private enterprise. It was a pure business proposition. A company was formed in 1903 with an authorised capital of £300,000 and subscriptions were invited for a share capital of £80,000. This Company was to acquire an estate of about 4,000 to 6,000 acres, adjacent to a large centre of labour and a main line of railway, with facilities for drainage and water-supply, in which a new town could be founded. Letchworth was selected and the Company purchased the free-hold of a compact block of land of about 4,000 acres. The area was then laid out. An agricultural belt was formed all round. This area was let out on short leases to bona fide farmers. Main thoroughfares and roads were made and drainage works undertaken. Provision was made for open spaces, common gardens, schools and churches. The building-area was laid out into "Zones"—the factory area, the sites for cottages and for the better classes of buildings, etc. Building was to be undertaken by private enterprise. The town was to be limited to about 30,000 inhabitants, the number of houses to an acre being fixed at a maximum of twelve. The sites are let out on 99 years' leases and 999 years' leases, with renewals at intervals of 10 or 99 years, and every covenant contains conditions as to building which, while not striving after uniformity, ensure the construction of houses with gardens satisfying sanitary rules and in keeping with the general scheme of the city.

The main economic basis of the scheme is the holding of the land as free-hold by the Company. The security to the

investors is the increase in the value of the lands due to the growth of the town, the "unearned increment." Incidentally, it may be added that, as the Company has no statutory powers, its position as landlord enables it to control building in the city. The interests of the inhabitants are secured in two ways. First, they are guaranteed long leases and security of tenure. Secondly, the dividend to the shareholders is limited to 5 per cent. per annum. The returns over and above this are utilised for the common benefit of the city. The temptation to dividend-hunting is thus taken away. The articles of the association also make provision for the taking over of the Company in trust for the inhabitants, so that these may secure the benefit of the unearned increment for themselves.

The city grew rapidly. In 1904 there were only 36 new buildings of the estimated value of £12,000 and the population was 400. In 1912, there were 1,761 new buildings (including factories and workshops) of the estimated value of £517,705 and the population had risen to 7,912. At first, professional and business men came in with their families. An agricultural population was also naturally attracted. The industrial development of the city came later and brought with it other classes as well. Manufacturers found that land values were cheaper and rents and rates lower than in London and that workmen could be housed better, and so moved to Letchworth. Printing, book-binding and various branches of engineering are the chief industries; there are also others, weaving and pottery works, etc. The industrial portion of the city is a cardinal point in the scheme of the originators of the movement. Apart from the material advantages to the community, it is claimed that it "has kept the town balanced," added variety to its life and saved it from the "usual suburban stagnation."

The movement has thus, on the whole, been a marked success. The rate of infant mortality in the city is 50·6 per mille as against 95 per mille for England and Wales. The general death-rate for the town is 8 as against 13 for

England and Wales. These figures offer an emphatic proof of the superiority of the Garden city in sanitary conditions. Letchworth is however not a mere eligible dwelling-place. It is claimed that the place has "a character of its own," that it possesses a spiritual atmosphere which cannot be ignored and that "spontaneity, democracy and comparative lack of conventions are among the fine assets of the place."

We do not propose to follow Mr. Purdom in his description of other aspects of life in the city. The experiment in co-operative house-keeping is very interesting, as also the succinct account of some features of the finance of the city. There are also several useful appendices—one of them gives the building regulations enforced, and another, the tenure of land in the city. Problems similar to those that faced the pioneers of the Garden city movement are becoming urgent among us and we strongly recommend this excellent book to those who are interested in such questions.

The Milk Question in Calcutta.

[BY CAPTAIN J. MATSON, I. A., ASSISTANT DIRECTOR OF
MILITARY DAIRY FARMS, NORTHERN CIRCLE, BENGAL.]

[Captain Matson was deputed by Government, at the request of the Corporation of Calcutta, to investigate and report upon the milk supply of Calcutta. Capt. Matson has accordingly submitted the following valuable and interesting report.]

The supply is derived from four
Sources of supply. sources :—

(1) Gowalas and others, mainly the former, who keep cows and buffaloes in the city area. This is probably the largest source of supply at present.

(2) Cattle kept in private houses and compounds usually, (and always ostensibly), for the milk requirements of the inmates.

(3) Gowalas who bring in milk from surrounding country districts as far away as 60 or 70 miles, this milk is

also brought in by dealers who buy it from the country producers. It is possible that none of it is brought in by the actual producers.

(4) Gowalas keeping cows in the extra suburban are a just outside the Municipal boundaries.

My remarks and advice on the whole case are as follows:—

PART I.

THE DEFECTS OF THE PRESENT SYSTEM.

1. I take first the city gowalas and cow-keepers as the supposed source of the largest part of the present supply, and as that side which has had most attention from Health Officers and other investigators so far.

I made a careful examination of the cowsheds and of the animals kept.

The defects are:—

(a) *The sheds in which the animals are kept are frequently insanitary, the floors badly made or, though well made at sometime, in bad repairs.*

(b) *The surroundings of the sheds when there is any room round them are sometimes very insanitary; indeed in some cases they are practically cesspools and rubbish heaps.*

In regard to these two there are variations. At the top, cases such as the “model cowshed” put up by the Corporation, or the cowshed belonging to an Anglo-Indian lady at 40, Middle Road, Entally, both of these having floors in good condition, plenty of room round about, and some clean open ground to which the cattle can be taken while the cleaning is going on.

Specimens of good
and bad sheds existing.

At the bottom, entirely horrible and disgusting cases such as I saw at No. 9, Middle Road, Entally. It is clear that a good deal has been done to improve matters by the Health Department Staff and with fair success, especially in

Goalapara, as the bad cases are much in the minority. But it appears that when the Health Department meet with a determined obstructionist, it is almost impossible to compel the keeping of premises in sanitary conditions, witness the two sheds at No. 9, Middle Road, Entally, above mentioned.

(c) *The sheds are seriously overcrowded, the cattle much too close to each other in the row, and the rows are frequently much too close together also. The drains are much too narrow, the sheds are badly designed in most cases.*

In most cases they have not enough site room to make them satisfactorily wide.

In this matter also the Health Department have made many efforts, not with so much success; there is much evasion of the law which limits the number of animals to be kept.

(d) *The cattle themselves and the walls of the sheds are kept in dirty condition.*

This is largely the result of overcrowding and faulty design of the sheds, but there is no attempt to clean the animals' bodies, or the walls, when these are plastered in dung, through the swishing of tails which, between whiles, rest in the dung and urine, or through the animals lying down in the dung on the floors, or dunging and urinating on one another.

The attitude of the cattle owners to this is that cow dung is not an insanitary material.

That is a matter for the Medical Advisers to pronounce on, but one thing is quite certain, viz., such matter, which is the rejection of the digestive system of the cow, is clearly out of place in the milk; however, under the conditions existing it cannot help but gain admittance to it.

(e) *The vessels in which the milk is drawn from the cows are not kept clean, the hands and the clothing of the milkers are not clean, the habits of these persons in carrying out their duties are dirty.*

Any one taking the trouble to watch the whole day's work
 in a gowala's yard would see something
 like the following :—
 Vessels dirty.

First the vessel has been cleaned after the previous occasion, by cold water and sand or earth. The vessel has a narrow neck and it is impossible to see the inner surfaces, so the degree of cleanliness depends on the energy of the operator; even if cleaned to the best of his ability, however, it is not clean as it should be, as it would be for instance if thoroughly scalded. Even were the vessel sterile, however, it is re-contaminated at milking time as the milker, the vessel having no handle, applies the whole or part of his hand to the *inside* of the vessel, in order to carry it. His hand may not be remarkably dirty; but he has not made any special efforts to clean it before starting.

Then he approaches the cow; as stated elsewhere, her body is allowed to be very dirty; the udder and teats are dirty also; the man does not wash the latter though he may knock off dirt which is thickly caked; consequently as he milks the dirt is disturbed, and falls into the milk.

Again, it is common to see the milker get his hands wet with the milk as he works, and this milk,
 Methods dirty. nearly black, dripping down. Further his head is constantly coming in contact with the side of the cow and the dried dung adhering to her coat, with hair and other matter, keeps falling down into the vessel. In this matter the narrow neck of the vessel is an advantage, as less dirt gets into it.

After the man has finished a cow usually he takes the milk and pours it into a large vessel, which is standing on one side; and in carrying again puts a hand inside so that it is washed by the milk as he goes. He does not strain the milk through anything, and such dirt and flies, etc., as have got in during milking, pass to the larger vessel with it.

The larger vessel is uncovered, and is swarming with flies.

(f) *Between being drawn from the cow and reaching the consumer, the milk is entirely unprotected from contamination.*

At some latter time, after milking, the milk is carried to the market, sometimes in one vessel, sometimes in more; when more than one is used, it is common to see a small one placed on the mouth of a larger. The small one was previously reposing on the ground, usually very dirty ground, and whatever dirt adheres to it is later washed off by the milk in the vessel below.

Otherwise the vessels are uncovered and open to all the Milk contaminated in transit. dust and dirt that blows about the streets on its way to the market. To prevent the milk spilling a wisp of straw is put in the mouth to float in milk; such straw is frequently very dirty and never sufficiently clean to make the practice desirable.

(g) *At the market while waiting for the purchaser the milk is kept in vessels with wide open mouths.*

The stalls of the market are crowded and consequently Dirty conditions in Markets. close and hot; the men perspire freely, the milk-cans stand between the men's legs, or jammed up against them, considering how milk absorbs any odour in the surrounding atmosphere the result is obvious, but as if this is not enough the common thing is for a perspiring hand and arm to be plunged into the milk, when some is to be dipped out for a customer.

Again, of course, there is no protection from flies, then the market surroundings may be insanitary; witness the Jorasanko market, which, I am told however, is to be paved.

At the Jorasanko market only milk was being sold at the time of my visit, but there is no guarantee in this matter.

At the Baithakkhana market other things are sold, though not in very close proximity. It is very undesirable that anything in the way of other food should be sold with dairy produce.

As regards the sources of contamination mentioned in (a) to (g) above, the Indian population rarely, if ever, consumes milk which has not been subject to a cooking process, more or less prolonged.

The custom is, doubtless, the outcome of necessity and, Culinary methods of so far as the adult portion of the people give protection. community is concerned, it probably gives adequate protection when applied, but a milk supply which is so insanitary that, unless sterilized by heat or otherwise, it is a menace to the health of the consumers and the lives of the Calcutta milk consumers generally, (and that is, in my opinion, an accurate description of the bulk of the Calcutta milk), is thoroughly bad.

The adult may not suffer much, but the children are seriously prejudiced, not perhaps of the well-to-do, who can afford a varied diet which makes up for deficiencies, but certainly of the poorer classes (I do not mean the destitute) who can afford a bare sufficiency and need it suitable and good.

Relatively moderate heat destroys most pathogenic germs (and also the lactic acid bacillus which, Limited efficiency of cooking. as is well known, is benign), but milk so dirty as that under discussion is still not safe when pathogenic germs are destroyed; it requires to be absolutely sterilized.

Only great heat can, however, render the milk completely sterile, and this brings with it serious defects from the point of view of digestibility.

Authorities could be quoted at length, but that is

unnecessary here; anyone interested is Siwithinbank and Newman: "Bacteriology of milk". recommended to consult the marginally Savage: "Milk and the Public Health". Rosinau: "The Milk question." noted works.

(h) *The milk is not susceptible of being effectively examined daily.*

The place of production is very close to the consumer, so that as the milk proceeds from cowshed to customers it follows so many routes that it would require an enormous inspectional staff to adequately control it.

(i) *The milk, before it reaches the consumer, has been adulterated.*

This is a most serious defect. The majority of the consumers are Indians, and as stated above, they, fortunately for themselves, consume little milk which has not been cooked. This minimizes the dangers arising from insanitary production, but they have no protection against the adulteration, and are cheated on all sides.

The remarks made to me by customers of the market milk vendors, show that though they are not educated to feel the need of sanitation, they are fully alive to the harm they suffer through adulteration.

Public dissatisfaction with prevalence of adulteration.

I have no means of judging if the medium of adulteration is likely to act as a contaminating agent also, local residents interested in the question allege that the water is at least pure, and therefore, harmless in this way.

(j) *The milk is dear in price and short in quantity.*

As to price, I do not contend that As. 4 per seer, which is supposed to be the common market price in Calcutta, is necessarily dear, and that the industry should be able to supply pure milk at a less price. That may or may not be the case but the present retail price of pure milk is *not* As. 4 per seer. There may be cases in which a sample approaching purity is bought for a price equal to about As. 4 per seer, but if allowance is made for watering, etc., the *average* retail price for the pure milk contained in the mixture runs from three to three and a half seers per rupee, indeed a good deal is sold at a price still higher in the markets.

Present price higher than supposed.

Those people who insist on having milk, *both clean and pure*, pay a price which is only a fraction under As. 5 per seer, (*vide* evidence of Mr. Keventer's Manager before the Corporation Committee), and it may be remarked that at that price Mr. Keventer's Dairy is giving much better value for money than the bazaar markets, selling their milk at As. 4 per seer.

However, I certainly think that either a better milk for the same money, or the same milk for lower prices possible. less money can quite easily be obtained, prices of foodstuffs, etc., remaining as they are, if this question is tackled in a practical way.

2. CATTLE IN PRIVATE HOUSES AND COMPOUNDS.

It is unnecessary to deal with this here. If these cattle are only used for supply of their owners, the Health Department can have little control over them, and, short of prohibiting the keeping of cattle in the city for any purpose nothing can be done, nor does it appear necessary. Probably their condition is usually fairly satisfactory. If their owners merely pretend to supply their own households and actually sell to neighbours, one must trust to the Health Department gradually putting a stop to the practice as evidence becomes available.

3. MILK FROM THE COUNTRY BROUGHT IN BY RAIL FROM DISTRICTS AT AN APPRECIABLE DISTANCE FROM CALCUTTA.

Large quantities of this milk can be seen any morning arriving at Sealdah Station, carried on the shoulders of scores or hundreds of men.

As to the defects of this supply, the matter requires some further investigation at the place of origin of the milk, but it is safe to say that it is subject to all the defects enumerated in para. 1 above, except perhaps the overcrowding of the animals in their byres.

As the milk comes from the country, there is probably plenty of room, and it is also *possible* that the surroundings are generally less insanitary. Granted plenty of space, and removal of wet and dirty matter, there is nothing more sanitary than Mother Earth.

This supply has further a defect of its own, in the
 In sanitary transit of insanitary way in which the milk is
 of milk. brought into Calcutta.

It appears that, if they travel by certain trains, the railway allow the men to bring in their milk in the carriages with them for no extra charge above the ordinary fare. In consequence, one sees a 3rd class compartment with men crowded on the benches, and with vessels full of milk on the floor between the latter all with open mouths.

The atmosphere of the compartment can be imagined, and its effect on the milk.

The time during which the milk is subjected to these conditions varies, of course, with the distance from which it is brought. I, however, do not think this milk can be appreciably worse than that of the city gowalas, for the reason that their milk is probably as bad as it possibly can be by the time it reaches the consumer. It would be no advantage to have this milk carried in the guards vans, if, in subsequent distribution, it is the common practice for perspiring hands and arms to be freely dipped in it.

As was indicated in (h) 1, above, this supply has one substantial advantage compared with others, in that the milk from all districts served by a given railway comes into the city by one route, *and must all pass a given point.*

Inspection and control is much simplified, and this advantage will be found very valuable indeed, if it is decided to take further steps in the sanitary control of the city milk supply.

4. EXTRA SUBURBAN SUPPLIES.

In this I include all milk brought in by road from minor Municipalities or districts round and about Calcutta, which therefore cannot be subject to examination in bulk.

It requires further investigation to show what approximate proportion of the total is obtained from this source, and what the general sanitary conditions are.

Even without this, however, I have no hesitation in saying that this source of supply is the most dangerous of all.

Commercially, it is at a disadvantage compared with the genuine Mofussil in rents, rates and taxes, so that it is safe to assume that there will be no unnecessary space utilized : it has not the benefit of the drainage and scavenging systems of the City, and it is under no control.

In saying no control, I do not forget that part of the supply comes from Municipalities or areas in which there is possibly some local control of sanitation, but I have no faith in the effectiveness of such control, especially when it is to be applied to milk produced, not for local sale, but for consumption in Calcutta, that is to say beyond the boundaries of the producers' own district.

I fear the great difficulty about this supply, even if satisfactory powers are obtained, is the great number of channels or routes by which it can enter Calcutta, but on this point also one would like a good deal more information.

PART II.

Before proceeding to details I wish to offer a few remarks on the general question of city milk supplies.

A study of what has been done in this matter in the rest of the world shows that, broadly speaking, there are two ways in which a good supply of milk can be arranged.

First, one that has been used a good deal in the United States, and there generally called the "certified milk" system. Under this the purveyor of milk is induced to conform to a

high standard of sanitary precaution, in order to obtain a certificate from a body of

Sanitary milk in
United States.

Health Experts, which enables him to get a considerably higher price. With this the consumer is induced by the advice and warning of the Health Experts to pay the higher price of the improved supply.

The use made of this system is entirely voluntary. In highly developed countries it has worked well and given great satisfaction up to a point. Naturally it meets with the approval of the trade also.

Its great defect, even in those countries, is that for those people who are insufficiently educated to appreciate the arguments of the Health Experts, or who are indifferent as to their own health, or that of their children, or who cannot afford to pay a higher price for sanitation, it provides no protection whatsoever, so that unless we adopt the attitude that the ignorant and the poor deserve to die, the system falls short of what is wanted.

(It should be noted that in speaking of not being able to "afford" a higher price for good milk, I refer only to sanitary precaution, and not to adulteration by admixture, for obviously everyone can afford to pay a higher price per unit of weight or measure, for pure milk, than for watered milk, since of the former a proportionately smaller quantity will serve the purpose of the latter.)

Second, a system under which steps are taken to *compel* the Dairyman to observe necessary precautions, as a condition of allowing him to sell milk at all. This, with variations of detail, is the one most common in Europe.

Sanitary milk in Europe. It has the great advantage of providing protection for everyone, especially those (the children of the poor and ignorant) unable to protect themselves.

Its defect is that as no improvement is paid for, it excites the constant hostility of the trade, and induces an immense amount of misrepresentation with the object of obscuring the issues, and delaying or preventing the enforcement of necessary regulations.

In Calcutta the "certified milk" system is, in my opinion, quite unsuitable, two main reasons being, first, in

view of the large proportion of the population which is of low average education and intelligence, that it depends on voluntary use, second, that it depends on a considerable increase in price, and the great majority of the people we have to consider are very poor.

My recommendations, therefore, are framed to provide the remedies of the second system, although in details, the spirit of the other method, which is the encouragement of the Dairyman to himself try and improve his methods, is frequently observed.

(To be continued.)

The Ideal City.

CITIES increase and the country becomes more and more empty. Observers shake their heads as they walk through the long, dull streets and breathe the close air, and see the pale faces of the people. "God," they repeat, "made the country, man made the town." Their hearts sink at the thought of the future, and they find themselves saying that "cities will crowd in a blacker, incessanter line"; that the din will be more, "the trade denser," and that they will "never see an enobling sight, or drink of the feeling of quiet again.

They forget that the highest possible life for men may be a city life, and the prophets foresaw not a paradise or garden, but a city with its streets and its markets, its manifold interests and its hum of life. A man often does well, as David, to leave the sheep folds to come down to see the battle.

The activities of the street, of the shop, and of the town meeting, are for many characters the best preparation for life in the city of God.

We have as our neighbours in a city, not the trees and the beasts but fellow human beings. We can from them learn greater lessons and with them do greater deeds. We can become more human.

The country may still be best for some people ; it is probably at some periods of their lives best for all—there is an ideal village as there is an ideal city—but the movement of men is obviously from country to city ; we must, as a consequence, fashion our cities after the highest pattern. We must make them good for the health as for the wealth of the citizens.

The ideal city will be large, with a quarter or half a million citizens. There will thus be room for a great variety of life and pursuits. The citizens will find at their own doors the interest that comes from the clash of many thoughts and many experiences. Because, too, the city will be large, every citizen will have a greater sense of responsibility. He will feel himself a citizen of no mean city, and as such he will act, and as such expect to be treated. The ideal city will be old, the growth of centuries, bearing on its face the mark of many storms and triumphs. There will be the very marks left by men of old time, as they hammered out their rough thoughts. Some of their buildings will tell of times of luxury and victory ; and in out-of-the-way places there will be remnants of castles and forts where the men of old fought and died for the city's liberties. The citizen, as he walks the streets of the ideal city, notes the odd names, turns by some strange twist, or catches sight of some tower will feel himself encompassed by a cloud of witnesses, and will hear a voice telling him that the ground he treads is made holy by the toil of the city's fathers. He will be both humbled and inspired ; two conditions necessary to satisfaction.

The ideal city will be a new city. Its streets will be broad and lighted with electric lights. Its houses will be good fitted with water and warmth for the comfort and the health of its inhabitants. Its spaces will be many ; great open spaces for games ; small open spaces, within the reach of every house, for the rest of the weak. Its public buildings will be of many styles, expressive of the character of their uses.

There will be the Cathedral brooding over the city, gathering together, as it were, its various interests, its manifold

activities to lift them up to higher issues, to God's uses. There will be the churches and the chapels, with open doors, offering the chance of quiet, and provoking thought by pictures and music. There will be schools, with class-rooms and playgrounds; technical schools, commercial schools, high schools. There will be the University College, with its laboratories, its great hall, and its class-rooms. There will be the Municipal Offices, with its Town Hall, on the walls of which an artist will have painted scenes from the city's history and where the citizens will throng in their thousands to hear great speeches or to listen to great music.

A visitor to the ideal city would be charmed by its first aspect; its variety for architecture, its beauty of color, its freshness and purity. He would miss little of what he had left in the country. He would breathe easily, enjoy the play of change, and taste the quiet which comes of deeper feeling. And he would know none of the depression caused by great wealth or great poverty.

In the ideal city none will be very rich, and none will be very poor. Knowledge and good-will will join together to give to every child the best education, and to secure its use of the gift; to render every house and street as healthy as the healthiest hillside in the world; to provide the best doctor and the most comfortable hospital for everyone who is sick; and to have at hand a friend for everyone in trouble.

In our ideal city art will grow out of common of life, undisturbed by contrasts of wealth and poverty. The people will have pleasure in their work and leisure to admire what is beautiful.*

* From "Worship and Work" from the writings of the late Canon Barnett in "Garden Cities."



Note on the quantity of water required per head in the Public Water- supplies of Bengal.

[By G. B. WILLIAMS, M. Inst. C. E., M.I.M.E.,
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CONSIDERABLE misapprehension appears to exist amongst members of Municipal bodies and other persons in this country, concerned with Local Government, in regard to several important points connected with the public water-supply of towns. Certain fallacies are current as to such matters as the quantity of water required per head, the number of house connections that can be permitted and the advantages and disadvantages of separate unfiltered water supplies, which at times become obstacles in the way of the progress of much needed schemes, and lead to mistaken policies being adopted in the management of water-works after they are completed. Moreover, the serious effect of wasting water, both on the Municipal finances and also on the efficiency of the supply, is very little appreciated.

A statement of how much water is really required for various purposes in different classes of towns in Bengal may remove some of this misunderstanding. My object in this note is to supply this information and at the same time to explain briefly some of the principles on which water-works in this country should be designed and managed so as to give an adequate supply without encouraging wasteful and unnecessary extravagance.

Although the note is primarily intended for Bengal, my remarks to some extent apply to towns in other parts of India and the East.

2. The first point to be constantly borne in mind is that in Bengal the economic factor in the problem of water supply is the all-important one. In all public water-supplies there is a certain amount of waste. In some European and American

towns it is prodigious. As the capital cost and working expenses of a water-works are approximately in proportion to the daily quantity of water supplied, a community which is wasting 50 or 75 per cent. of its water-supply is paying two or three times as much for the water required as it need do.

Waste of water is an expensive luxury at any time, but in the wealthy towns of Europe and America the rate-payers are able to pay for many Municipal luxuries that cannot be afforded in India. In Bengal, Municipal water-supplies on the lines of those in European and American cities are, in most cases, absolutely out of the question, and the waste of water is a proportionately more serious matter. There are two ways of paying for water consumed—(a) by a water-rate levied on the rate-payers in the area supplied, and (b) by water sold by meter. In Bengal the income from (a) is limited by law, and in most of the provincial towns the number of consumers who would be prepared to pay for any large quantity of water sold in bulk is very small. Even with generous assistance from Government, it is only just possible for a certain number of the provincial Municipalities to finance a limited public water-supply, and the ability to keep down the consumption to a reasonably low figure may make the whole difference between a supply of good water sufficient for the ordinary necessities of life and none at all. The all-important question in any town is therefore: What is the minimum supply that will satisfy the legitimate demands of the inhabitants.

3. The quantity of water actually required for purely domestic consumption, that is, for drinking, cooking, washing utensils, etc., is small. There are towns in Bengal, supplied entirely from street standposts, which do not use more than 2 gallons per head. In Gaya, where for many months a constant supply was given under a high pressure through street standposts to the whole town, containing some 80,000 inhabitants, the average daily consumption, including leakage from mains and standposts, did not exceed 5 gallons per head of the population served.

In comparing this quantity with the consumption in other countries, it must be noted that in Bengal the lower class people do not generally use filtered water for bathing in. They bathe either in tanks or in the rivers. In almost every town, there are numerous places where this can be done.

4. Roughly speaking, it may be said that in this country it is generally (although by no means invariably) the case, that within certain limits, the larger the town is, the more is the *per capita* consumption of water. In a big town there is usually a larger proportion of better-class inhabitants living in good-sized houses who require house-connections, and are able to pay for them, than in a small one. Small towns have no sewers and frequently few masonry drains; so but little water is required for flushing. Some of the larger towns in Bengal will probably have sewerage systems within the next few years, and this will mean a supply of water for connected latrines, urinals, etc. These are some of the causes which affect the tendency of the consumption of water per head to increase with the size of the town. The relationship between numbers of population and rates of consumption, although subject to many exceptions, is sufficiently general to make it possible to roughly classify the requirements of the towns in accordance with population.

5. For this purpose I divide the Bengal towns into five categories as follows:—

Class A: towns containing less than 10,000 inhabitants.

Class B: towns containing from 10,000 to 25,000 inhabitants.

Class C: towns containing from 25,000 to 50,000 inhabitants.

Class D: towns containing from 50,000 to 100,000 inhabitants.

Class E: towns containing from 100,000 to 200,000 inhabitants.

There are no towns with over 200,000 inhabitants in Bengal, except Calcutta, in which the conditions differ materially from those in the other towns in the Presidency, and in any case a town of 400,000 or 500,000 inhabitants would probably not require much more water (if any) per head than one of 200,000.

6. Taking these classes in order, in towns of class A the utmost supply that can usually be afforded is one entirely through street standposts. No water is used for public purposes at all, and for private consumption from 2 to 5 gallons per head per day is sufficient, including leakage from standposts and mains.

7. In towns of class B there are likely to be a certain number of better class persons living in fair-sized houses. These will naturally wish to have private house-connections. The vexed question of house-connections is thus introduced. It may be said at once that private connections, where they can be afforded, are from a sanitary point of view desirable. They encourage personal cleanliness and make it less probable that polluted water will be used for drinking or washing utensils. This is, however, only within certain limits. The conditions of life in Indian towns must be entirely revolutionized before it will be possible to give every house a separate connection, as is done in an English town. Private connections to the *bustee* huts, hovels, and low class *pucca* houses, which form the majority of dwellings in these towns, would be entirely out of place, and the inhabitants of this class of houses must in the future, as in the past, continue to draw their water from the public standposts.

Apart from this, however, the chief reason for limiting the private house connections is the very great increase in the consumption that results from their introduction. Some extra consumption is natural and legitimate. Persons supplied through house-connections use the water supplied for bathing, for flushing down house drains and for other purposes, for

which the population served by the street standposts generally do not require it. On the other hand, much of the water, drawn through the private house-connections, is absolutely wasted. Taps are left running all day long, baths and vessels are filled at night and then emptied without being used in the morning, and the supply is abused in every possible way. Experience has shown in Bengal that persons supplied through an unmetered private house-connection may in some cases each use as much as 20 times the quantity used by those who get their supply from street standposts. I have no hesitation whatever in saying that unmetered house-connections are luxuries that no Bengal town can afford and which should never be permitted.

Provided there is no serious waste, 20 to 25 gallons per head per day is quite sufficient for any person supplied through a house-connection where there are no connected water-closets, or dumping sinks, and 25 to 30 gallons where there are. By metering the connections and charging for excess water consumed, there will be no difficulty in keeping down the consumption to these average figures.

8. In a town of the class I am now considering, another question also arises, and that is, the quantity of water used for public purposes. A town of class B is unlikely to have a sewerage system, no water would therefore be used for connected latrines, night-soil dilution or sewer flushing. Water is, however, required for drain-flushing and road-watering and for the supply of public buildings.

Road-watering is a very useful sanitary measure. The dust which is blown about Indian towns in enormous quantities during the dry weather has an injurious effect on the respiratory organs, and moreover it is liable to carry polluting matter into food. The quantity of water required for road-watering is not really large. It varies in different towns according to the length of roads to be watered, their average width and the material of which they are made. It is obvious, for example, that Calcutta, with its many wide roads, will

require more water per head of population than Howrah. If the road-watering is confined to the main streets where it is most required, 1 gallon per head per day is generally sufficient for watering once a day and 2 gallons per head for two daily waterings in a small or medium-sized town. For larger towns these figures become $1\frac{1}{2}$ and 3 gallons per head per day, respectively.

Drain-flushing also requires but little water if proper flushing tanks are used. The quantity required may sometimes be further reduced by feeding the flushing tanks from the waste from the street standposts. The quantity required for drain-flushing should not exceed $\frac{1}{4}$ gallon per head of population per day.

Supply of public buildings may be taken at an average of another $\frac{1}{4}$ gallon per head per day. In many places it is much less.

The only other items of consumption in the class of towns I am considering are—the leakage from mains and standposts, and water used for sandwashing in the case of a slow sand filter installation, and filter-washing with mechanical filters. The leakage from the mains and standposts depends on how they have been laid and are being looked after. It should, in a water-works of this size, not exceed $\frac{1}{2}$ gallon per head per day. Sand-washing and filter-washing will require about $\frac{1}{2}$ gallon per head per day.

9. To illustrate the foregoing remarks, I will take an imaginary town of 20,000 inhabitants. Probably one-tenth of the population will be supplied through private house-connections, and on the foregoing premises the total daily consumption of the town will be :—

GALLONS.

2,000 persons supplied through private	
house-connections with 20 gallons per	
head per day 	40,000

18,000 persons supplied through street standposts with 5 gallons per head per day	...	...	90,000
Street-watering (once a day)...	...	...	20,000
Drain-flushing	...	...	5,000
Supply of public buildings	...	...	5,000
Leakage	...	...	10,000
Filter or sand washing	...	...	10,000
Total			180,000 or 9 gallons per head.

10. Here I may refer to the idea generally prevalent that a considerable saving can be effected by using unfiltered water for such purposes as drain and sewer-flushing, latrines and road-watering. This notion is a fallacy. It is possible that in certain circumstances in a large town, the saving in the cost of filtration and pumping might financially justify the extra cost of a double set of mains and pumping stations, but in the ordinary Bengal town this would certainly not be the case, and in any circumstances the objection to an unfiltered water-supply from a sanitary point of view and the troubles that accompany its use, make it undesirable even if it were not (as it would be) in such cases an additional expense. Calcutta is one of the few towns in the world which possesses an unfiltered water-supply. So far as I know, it is unique in having separate house-connections for unfiltered water.

It may, I think, be safely assumed that no other Bengal towns will follow Calcutta's example and introduce a complete unfiltered water-supply system, so that any water required for public purposes will come from the filtered water-supply.

11. I next come to the towns in class C, which are those having between 25,000 and 50,000 inhabitants. This class will differ from class B mainly in having a larger number of persons supplied through private house-connections. Otherwise, the proportions will be much the same as in the latter.

As an example, I will take a town of 40,000 inhabitants and assume that of these one-sixth, or say 6,500 persons, are supplied through private connections.

The daily quantities required will be :—

	GALLONS.
6,500 persons supplied through private connections with 20 gallons per head per day	130,000
33,500 supplied through street standposts with 5 gallons per head per day ...	167,500
Road-watering (once a day) ...	40,000
Drain-flushing ...	10,000
Supply of public buildings ...	10,000
Leakage ...	20,000
Sand or filter washing ...	20,000
Total ...	397,500, or say
	10 gal- lons per head.

12. In class D towns, containing a population of from 50,000 to 100,000 persons, there should be in the near future a partial system of sewers, public connected latrines and dumping depôts. There may also be possibly a few private water-closets, and I allow in consequence a somewhat higher consumption per head for the private house-connections. The quantity of water required for public latrines and night-soil dilution will be about 3 gallons per head of the total population and for sewer-flushing $\frac{1}{3}$ th gallon per head.

In the case of a town of 100,000 inhabitants the road watering may take place twice a day and I allow $2\frac{1}{2}$ gallons per head for it. This may include a certain quantity of water required for public gardens.

For a town of 100,000 inhabitants I consider the following would be a fair daily supply. One-fifth of the inhabitants are assumed to be supplied through private connections :—

	GALLONS.
20,000 persons supplied through private connections with 25 gallons per head per day ...	500,000

80,000 persons supplied through street standposts with 5 gallons per head per day	400,000
Road-watering (twice a day)	260,000
Drain-flushing	25,000
Sewer-flushing	2,000
Public latrines, urinals and night-soil dilution	300,000
Supply of public buildings, etc.	25,000
Leakage, etc., say	75,000
Sand and filter-washing	75,000
Sundry	30,000
Total ...	1,700,000 or 17 gallons per head.

13. In the last class of towns, class E, those having populations of between 100,000 and 200,000 inhabitants, the sewerage system should be more fully developed. The quantity of water required for public water-closets, latrines, urinals and night-soil depôts will probably be about $3\frac{1}{2}$ gallons per head. One-fourth of the population may be supplied through house-connections, and I allow them a quantity of 30 gallons per head per day to provide for the increased number of water-closets and private dumping sinks.

In a town of 200,000 inhabitants the total supply given should be as follows :—

	GALLONS.
50,000 persons supplied through private connections with 30 gallons per head per day.	1,500,000
150,000 persons supplied through street standposts with 5 gallons per head per day ...	750,000
Street-watering (twice a day)	600,000
Drain and sewer flushing	90,000
Public latrines, urinals and night-soil depôts ...	700,000
Supply of public buildings, etc.	50,000
Leakage, etc.	200,000
Filter or sand-washing	200,000
Sundry	110,000
Total ...	4,200,000 or 21 —gallons per head.

14. The following table gives the summary of my estimates of the quantity of water required *per capita* under the different headings for the various classes of towns:—

Consumption in gallons per head per day.

	Class A.	Class B.	Class C.	Class D.	Class E.
Domestic consumption (including private water-closets). ..	5	6·50	7·43	9·00	11·25
Public latrines and urinals, night-soil depots, etc. ..	..	..	..	3·00	3·50
Supply of public buildings ..	..	·25	·25	·25	·25
Sewer and drain-flushing ..	..	·25	·25	·45	·45
Street-watering ..	..	1·00	1·00	2·50	3·00
Leakage from mains, street standposts, etc. ..	..	·50	·50	·75	1·00
Filter or sand-washing ..	..	·50	·50	·75	1·00
Sundry (stables, cowhouses, <i>dhobikhanas</i> , etc.). ..	..	..	·07	·30	·55
Total ..	5	9·00	10·00	17·00	21·00

It is to be understood that although the towns are classified in accordance with their population there are several towns which, owing to local circumstances, must be treated as being out of their proper class. For example Darjeeling although according to its population it should be in class B, may be considered a class D town, whilst Howrah with its inadequate drainage system and with no form of sewerage at all is at present a class C town. Dacca is now a class C town, but when the new sewerage system is in complete operation, it will become a class E town.

15. The figures in the above table are for a constant supply throughout the 24 hours and give, in my opinion, the maximum quantities required for domestic and public purposes in the towns of the various classes. They are the hot weather figures. In the rains and cold weather, the consumption should be less.

They do not include any water supplied for trade purposes. There are certain cases in which it might pay a town to supply water for trade purposes, such as for railway locomotives or for boilers at manufactories, or to a distillery ; but as it is impossible to generalize about circumstances which might make such a policy advisable, it is useless to discuss them in this note.

16. To sum up, the following principles should govern the introduction and management of water-supply schemes in Bengal :—

(1) The water-supply of a Bengal town is largely an economical problem, and no town in this Presidency, outside Calcutta, can afford an extravagant supply on the lines of some of the European and American towns.

(2) Such large supplies are in fact not required. The legitimate demands of mufassil towns are met by water-supplies varying from 4 or 5 gallons per head in the case of a small town up to a little over 20 gallons per head in the case of a town of 200,000 inhabitants.

(3) This includes in the case of the larger towns water required for public purposes, such as road-watering, drain and sewer flushing, and, where they exist, latrines, water-closets, urinals and night-soil depots.

(4) Separate unfiltered water-supplies are neither necessary nor desirable, and in the case of most towns would be more expensive than using filtered water for public purposes.

(5) The possibility of being able to give and maintain a sufficient and proper supply depends mainly upon the prevention of waste in private house-connections. Unrestricted and unmetered house-connections will ruin any water-supply.

(6) House-connections must be limited in number to those that the municipality can afford to give. Every private connection must be metered and excess consumption charged for at a sufficient rate to make real waste of water an expensive luxury. The number of persons supplied by such

house-connections would probably vary from about one-tenth of the population in a small town up to possibly one-fourth of the population in a town of 200,000 inhabitants.

(7) The private house-connections must not be given in such numbers or under such conditions as will allow them to interfere with the water required by the street standpost consumers or for public purposes. It is more important to water roads and flush drains than to give a large number of house-connections.

(8) Provided, however, the rest of the community do not suffer therefrom, the grant of private house-connections to better class houses is in itself desirable.

(9) With due care in the management of the water-supply, even a moderate-sized town can usually provide enough water for maintaining the sewers clean in a partial sewerage system. Such a system will probably enable a saving to be made in the conservancy considerably greater than the cost of the extra water so used.

17. Finally, I may say that if in any town in this Presidency the consumption per head is much in excess of the quantity which, having regard to its population and the local condition, would suffice for its needs according to the table I have given in this note, it may be assumed that there is waste somewhere, and the municipal authority should carefully enquire into the matter. The ordinary municipal rate-payer has no idea of the amount of money which a serious waste of water is costing him. In a municipality in which it costs 3 annas to supply 1,000 gallons of water (an ordinary figure), the waste of 100,000 gallons a day means a waste of nearly Rs. 7,000 per annum, and there are few municipalities which can afford to throw away this amount with absolutely nothing to show for it.



Inelasticity of Municipal Revenues.

[By V. R.]

THE article 'Inelasticity of Local Revenues' in the August Number of the *Local Self-Government Gazette* deals with the method of augmenting the resources of Local Boards. A consideration of the same question as applied to Municipalities will not be without interest, and an outline of the probable methods by which the resources of the Municipalities may be improved is therefore attempted to be given hereunder.

Both the Government and the governed are at one in thinking that the rate-payers in Municipalities are already over-burdened with taxation and any attempt to introduce new taxes or to increase the rate of existing taxes will necessarily be unpopular and tend to make Municipal administration a matter of very hard sailing. We have, therefore, to look to ways and means of improving Municipal finances outside the sphere of taxation: i.e., to see if the Municipalities can be relieved of the burden of any fixed items of expenditure, which they now meet. Expenditure thus saved is money gained and should be looked upon as a fixed surplus which may be utilized for certain permanent improvements.

Thirty years ago when the present Municipal Act was passed (Act IV of 1884), the duties of Municipal Councils, as they were then conceived, are enumerated in Section 113 of the Act. The ideals of civic life have advanced by leaps and bounds during this period of 30 years in consequence of the rapid strides in the advancement of scientific knowledge, and the methods to be adopted nowadays to keep a town sanitary are far more costly than they were in 1884. On the other hand, the increase in the revenue has not been keeping pace with the increased expenditure and consequently Municipalities had to content themselves with their

primitive methods of sanitary work and any attempt to improve it, where such attempts were made, were half and half measures. Under such circumstances, and with the loud cry everywhere for improved sanitation, water supply and drainage, for more Medical institutions to give relief to the increasing percentage of unhealthy persons, and for the diffusion of education among the masses, the Government recognized the inadequacy of Municipal resources and proffered their helping hand in the shape of grants for the several purposes detailed above. In the distribution of grants, the Government have been guided by the principle 'Help those that help themselves.' So far it is well and good. But most of the Municipalities are at best major unions and have the disadvantage of not commanding the necessary men who are not only willing to sacrifice their time and energy in a public cause but also men who have the necessary capacity to formulate schemes for improvement in several directions and the tact to carry out such schemes if entrusted to them. The result has been that many Municipalities have not profited themselves substantially by such grants. Even in the case of big Municipalities, the want of such men with business capacity and tact in large numbers is evidenced by the application for sanitary grants in respect of the purchase of conservancy plants, building compound walls, removal of prickly pears, etc., which are legitimately expenses that should be met from Municipal Funds. Because the Councils concerned were not able to formulate any really useful schemes to improve the sanitation of the place *permanently*, they have applied and obtained grants for such purposes. The orders of Government in regard to the objects for which grants would be distributed were very strict to begin with but after a year or two, when the resources of the Councils to formulate fresh schemes were at a discount, the Councils contented themselves with asking a grant for any sanitary purpose and the Government have also been kind enough to grant them, apparently having lost sight of their first rigorous rules.

Under these circumstances, it may not be improper to consider if the present system of partial help under each and every class—Sanitation, Medical relief, Water and Drainage system, Education, etc.,—may not profitably be replaced by a more specialized relief, i.e., provincializing certain items of expenditure and localizing others, it being understood that the financial burden on the Imperial and Provincial revenues need not, to start with, be materially increased unless the Government themselves think fit to do so on the merits of each case. An examination of what shall be solely a provincial charge will therefore be attempted.

WATER AND DRAINAGE SCHEMES.—Having started with the presumption that the finances of the Municipalities are inelastic, and seeing that in the case of Water Works and Drainage Schemes, the Government generally give half the cost of the scheme as grant (in special cases more), it may reasonably be expected of Government to incur the balance of the cost from Provincial Funds, the cost of maintenance alone being borne by Municipalities by means of special taxation. The extra grant thus given has no doubt to be met by withdrawing aid in other directions indicated below. Water supply and drainage are now recognized to be the first requisites of a healthy living and it is no use leaving it to the option of a local body to undertake it which consents to do so only if it is financially able to repay the loan that it may have to raise. It is but proper that the foremost claim of the people on Government for help in this all-important necessary of life should be met by Government fully and completely before attention is bestowed on any other kind of relief.

MEDICAL RELIEF.—The maintenance of hospitals and dispensaries are now the burden of local bodies. It would not be much if the Government is expected to maintain out of their funds at least all the hospitals, the Municipalities being left to maintain dispensaries. A recent G. O. announced that in the case of all hospitals and dispensaries *hereafter* to be

started, half their cost (initial and recurring) including the pay and allowances of Medical subordinates will be met from Provincial Funds. A better arrangement, it is submitted, would be that all hospitals be maintained by Government and all dispensaries by the local bodies and if the Government like, they may share half the expenses in connection with the pay and allowances of Medical subordinates entertained in the dispensaries.

EDUCATION.—The diffusion of education among the masses is a legitimate charge on local revenues and a system of grant by Government is needless. A fixed percentage of the income of the Municipality should be set apart for this purpose and it should be seen that this is properly spent. If the requirements of a Municipality are not adequately met by such provision, a permanent recurring subsidy may be more useful than the present temporary grants which are received from year to year. The result of the present policy of increasing the number of schools out of Provincial grants has, in a large measure, resulted only in converting aided schools into Municipal Schools, with no appreciable change in the quality of education; nor has there been any appreciable increase in the area benefited by such increase in the number of Municipal Schools. What was before a private concern of an individual who was content with an yearly grant-in-aid has now become a public institution ensuring for the manager, at least for one year, a fixed monthly pay and a fixed monthly house-rent for his house. A wide-spread system of grant-in-aid schools with the direct control over them vested in the Municipalities is likely to serve a more useful purpose than an increase in the number of Municipal Schools.

SANITATION.—The grant under this head may be limited to such of the sanitary improvements as are likely to improve the sanitary condition of the place *substantially and permanently* and which the Councils may not be able to undertake because their cost cannot be met from their normal resources;

such, for instance, as the opening up of congested parts, opening conservancy lanes, town extensions, filling up of large tanks which are a menace to public health, improvements to tanks, etc., which are used for domestic purposes, and sinking of wells on a large scale where piped water system is not likely to be introduced in the near future. Expenses in connection with the purchase of night soil carts, rubbish carts, dust bins, putting up latrines and urinals, constructing compound walls, opening burial grounds, etc., ought generally to be a legitimate expenses out of the Municipal Funds and should never form the subject of subsidy from Government.

Having considered how certain items of expenditure can be provincialized and the Municipalities thus helped to utilize the savings thus effected on the necessary Municipal improvements, we may turn our attention to the receipt side. As suggested in the article on the "Inelasticity of Local Revenues," a fixed percentage of the Excise Revenue realized within Municipal limits may well be handed over to the Municipalities.

An examination of the method of taxation discloses that all the residents of a Municipality do not contribute towards the maintenance of the administration—though every one enjoys the benefits thereof. Those who have vested interest in the place pay house and land taxes and those that carry on a profession or are employed in any office pay a profession tax. Outside these, there is a very large proportion of the population who do not contribute anything towards the maintenance of Municipal administration. It would therefore be well if some thought is bestowed on this subject and efforts made to render every inhabitant of a Municipality who does not pay House or Land or Profession Tax to contribute his quota towards the maintenance of Municipal administration whose benefits he is sharing with others *gratis*.



Municipal Accounts.

[BY B. SREENIVASIENGAR, B. A., B. L., ASSISTANT
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I

Municipal Account Rules for town areas in the United Provinces.

IN the United Provinces a draft Municipal Account Code containing a comprehensive system of account rules applicable to all classes of Municipalities has been published by Government. The rules contained in the draft under review are evidently intended for Municipalities with small incomes.

2. The following points require consideration :—

(1) Rule 11 contemplates only periodical audit of the accounts of the Municipal funds. No definite intervals are prescribed. Considering the long intervals between the occurrence of the transactions and their local audit by peripatetic officers of Government, a continuous or concurrent audit by Municipal auditors monthly is absolutely necessary. Provision should be made for this as in the Municipalities in the Bombay Presidency.

(2) No provision is made in these rules for an easy and ready verification of the proper disposal of all moneys received in the office of the town fund. Under rules 25 and 26, the entries of receipts are required to be made in the demand and collection register and the daily totals on account of each head posted into the general cash book. As the demand and collection register T. 3 is in the form of a ledger and entries of collection made on any day will not all be serially made in one place, the daily totals cannot be easily made out and verified with the total of the receipts.

Either a separate collection register or day book should be maintained for the purpose by the outdoor collectors or a petty cash book in the office of the town fund to account for

the receipt and disposal of all cash received whether on account of revenue or otherwise, and to serve as a check on the entries in the general cash book.

(3) Under rule 39 the general cash book is required to be closed and balanced daily but this is not quite necessary except perhaps to know what balance is available at the treasury to issue cheques against the town fund. There would be some saving of work by requiring that the cash book may be closed once a month. In working out, however, the balance in the general cash book care should be taken to make allowance for revenue received in the office of the town fund but not remitted to Treasury. The maintenance of a petty cash book as above suggested will however avoid the possibility of confusion.

(4) Rule 51 does not clearly show after what period deposits should be treated as lapsed ; definite instructions in the matter seem necessary.

3. In regard to the three rules contained in the Appendix, which are intended only for very small Municipalities with income not exceeding Rs. 3,000, it may be observed that there would be considerable delay in requiring the demand and collection register to be prepared by the clerk at head-quarters and sent to the bakshi for use.

The simpler arrangement would be to have the demand and collection registers prepared by the bakshi himself and have it verified and authenticated by the officer corresponding to town magistrate with the help of the town clerk, and to require the bakshi under proper scrutiny to make the daily collections and record them in a separate collection register or day book, which should be examined by the town clerk with the receipts at the time of each remittance to treasury.

The treasury should not receive any collections from the bakshi unless his day book and the chellan accompanying the remittance are initialled by the town clerk in token of his examination.

II

The Berar Municipal Fund Account Rules.

The Municipal Fund Account Rules framed by the Chief Commissioner in exercise of the powers conferred by section 145, sub-section (1) of the Berar Municipal Law, 1886, have been published in the *Central Provinces Gazette*.

1. The rules are fairly comprehensive and suitable but a few points require further consideration.

2. The rule contained in Chap. I. R. 13, laying down that remissions of revenue which cannot be collected may be granted by the committee irrespective of any limit is not a very desirable one. When the committee is not empowered to sanction the writing off of payments exceeding Rs. 10 erroneously made and found irrecoverable, it is not understood how they may be authorised to remit irrecoverable arrears of revenue without any limit whatsoever.

Such a rule will not ensure the taking of prompt steps to collect arrears or a thorough scrutiny of the remission list with a view to see if in respect of the items included therein all possible steps for recovery are promptly taken and if the items are really recoverable. It would be well to make a distinction between what are really called remissions of revenue and writes off as prevailing in the municipality in Madras Presidency and to have a rule similar to what obtains in Bombay, limiting the powers of the committee in respect of sanctioning writes off.

Writes off are the amounts which the committee find irrecoverable, while all exemptions in whole or in part from the demand granted temporarily on account of vacancy of the house or otherwise should be classified as remissions.

The committee may have full powers to grant remissions (with, of course, the reasons being clearly recorded in each case), but in respect of writes off a limit of individual annual demand similar to that adopted in respect of irrecoverable erroneous payments may be adopted.

The suggested rule would read as follows :—

“ Remissions of revenue or exemptions from taxation claimed require the sanction of the committee. Irrecoverable arrears of taxes may also be written off under the sanction of the committee except in respect of cases where the individual annual demand exceeds Rs. 10 and requires the sanction of the Deputy Commissioner or the Commissioner as noted below :—

Individual demands exceeding			
Rs. 10 and not exceeding			
Rs. 100	...	...	Deputy Commissioner.
Other cases	...	...	Commissioner.”

3. Rule 16 (Chapter I) prescribing a percentage of check of original receipts with the counterfoils and collections is a *very wholesome one* and serves as an effective check against the manipulations of entries and tampering of figures originally entered by the employees apparently with a view to defraud the Municipal Committee. But this rule will not be strictly observed nor will it go far enough if a continuous or concurrent monthly audit of the municipal accounts both of receipts and expenditure be not also arranged.

It may be an instruction to the municipal auditors appointed for this work to check a certain percentage of the original receipts with counterfoils and collection registers as part of their audit.

4. Rules 25 and 38 of Chapter III *Cashier's Cash Book and Accountant's Cash Book.*—

The distinction between these two cash books requires to be explained, otherwise there will be lot of confusion and complication in accounting. The accountant's cash book is intended to show all receipts and payments whether in cash or by adjustment pertaining to the municipal fund and it should be the primary and important record on which all other accounts should be based. The cashier's cash book is prescribed for the purpose of ensuring the proper disposal of all money (including

cheques) received in the municipal office whether as revenue on behalf of the municipality or as amounts drawn from the municipal fund for payment on behalf of the committee. In this book should be recorded, on the receipt side, not only all revenue received for remittance to treasury on behalf of the municipality but all cash or cheques received for payment to municipal employees or contractors, whether on account of establishment pay or for works done, etc., and on the expenditure side the disposal of all cash or cheques received in the office should be noted. The cashier should be made responsible not only for remittance of revenue to the treasury but also for prompt disbursement of money drawn from the municipal fund and for obtaining a proper payee's receipt. Want of proper supervision over the disposal of amounts charged to the municipal fund has led to several irregularities in many a municipality.

The cashier's cash book should of course be closed daily and the daily balance of cash (including cheques) verified, if possible by the Secretary or Manager with the amount on hand. There is however not much useful purpose served by the accountant's cash book closed and balanced daily, unless perhaps it is found necessary to know the balance in treasury to draw cheques against it. It is sufficient if the book is closed once a month and the receipts and expenditure verified and the closing and opening balances agreed with them in the treasury pass book as laid down in rule 38.

Conservancy Staff in the United Provinces.

THE United Provinces *Government Gazette* of September 25th, 1915, contains certain draft rules regulating the powers of Municipal Boards to entertain a supervising conservancy staff and prescribing the duties to be assigned to, and the qualifications to be required of, the officers

appointed to such staff. We consider the proposed rules excellent. We believe there are similar rules in the Madras Presidency. The position of the Chief Sanitary Inspector under the draft rules, is, however, an improvement, which the Local Government may well consider. No doubt Health Officers are proposed for the larger Municipalities in Madras, (*vide* G. O. reprinted at p. 980) but when Chief Sanitary Inspectors are appointed, their appointment should be based upon certain qualifications—such as are definitely laid down in the draft rules—and not upon the pleasure—or, it may be, the caprice—of the Chairman or the majority of the councillors.

The pay fixed is also fair. It is time that in this presidency the pay of the Sanitary Inspector was raised to a minimum of Rs. 40. It is only Rs. 25 at present.

Rule 9 of the draft refers to the probation and the confirmation of the Sanitary Inspector. For a year from the date of appointment a Sanitary Inspector shall be on probation and after the lapse of that period, a municipal board may, subject to the approval of the Sanitary Commissioner to Government, confirm him in the appointment.

Rule 11 lays down that no municipal board may employ a Chief or Sanitary Inspector, appointed under the preceding rules, on work other than sanitation, mortuary registration and the prevention of encroachments on public property, except by special permission of the Sanitary Commissioner to Government. That is a very desirable rule. Using Sanitary Inspectors as tax-gatherers—which is very common—can no longer be tolerated. The work of preventing encroachments on public property may well be left to the Engineering staff. Vaccination may, however, be specifically included in the Sanitary Inspector's work.

The syllabus of the course described in the Annexures to the Rules seems carefully prepared. But we consider a course of four months is too short to get through the prescribed curriculum of study; it should extend over a period of at least

six months. Eighty lectures in Hygiene are far too many. Half that number is, we imagine, a long enough course.

We think there is a great necessity for a practical course. In Madras, Assistant Sanitary Inspectors while under training undergo practical training by going with Divisional Sanitary Inspectors of the city twice or thrice a week, thereby seeing for themselves exactly what the Sanitary Inspector's work is. They have also plenty of outdoor excursions conducted personally by the officer who delivers the lectures. It seems to us that this is one of the most important parts of the training.

To the draft rules now published, we might suggest an addition, *viz.*, "Every Chief Sanitary Inspector and Sanitary Inspector may be required to visit one or more chief towns, preferably of another province, and study the methods followed in them with regard to sanitation. On production of a certificate that he has familiarised himself with the Health Administration and Sanitary Institutions of the place or places visited, he may be granted his travelling expenses." The value and importance of the comparative knowledge and experience thus gained cannot be overestimated.

Vaccination in the Madras Presidency.

THE report on the working of the Vaccination Department in the Madras Presidency for the official year 1914-15 and the Government order thereon have been published.

The chief features of the year were—

(i) a slight increase of 0·6 per cent. in the total number of cases vaccinated ;

(ii) a rise of 27·1 per cent. under the head of re-vaccination in local fund areas, including the agency tracts and a fall of 15·8 per cent. in Municipalities ;

(iii) a decline from 91·8 to 90·8 in the percentage of success under primary vaccinations and from 80·5 to 79·1 under re-vaccinations ;

(iv) a fall from 33·9 to 33·5 in local fund areas including agency tracts and a fall from 50·7 to 50 in Municipal areas in the proportion of successful operations per mille of the population ;

(v) a further increase of 3·7 per cent. in the number of successful operations on children under one year of age ;

(vi) a rise from As. 3-8 to As. 3-10 in the average cost of each successful case ; and

(vii) an increase in the registered mortality from small-pox.

An unusual feature of the year was the increased rate of success secured during the hot months of the year. The Sanitary Commissioner suggests that this may be due to unreliable returns from the vaccinators. The Sanitary Commissioner will doubtless impress upon Deputy Inspectors of vaccination the necessity for checking the work of vaccinators more closely. The result of the experiments which are said to be in progress with a view to secure a more durable vaccine will be awaited. In paragraph 4 (1) of his report on vaccination the Inspector of Vaccination points out that the efficiency of vaccination and the consequent decrease in small-pox depend largely on improvement in the pay and prospects of vaccinators and therefore suggests that proposals for the improvement of the vaccination staff may be approved and given effect to as proposals are received from each District Board, without waiting until proposals from all districts are received and sanctioned. The Government, however, are unable to accept this suggestion, as the scheme depends very largely on the number of deputy inspectors of vaccination required for the efficient control of the work and as this establishment forms one cadre for the whole Presidency. The Government hope to be in a position to issue general orders in regard to the whole Presidency in the course of the current year.

Municipalities in the United Provinces.*

1. The Committee appointed by Government to consider the question of extending the system of non-official chairmen to the larger municipalities, met on the 8th April, 1914, at Lucknow, all the members being present. A summary of the opinions of the members on the questions discussed is attached.

2. *Constitution of committee.*—The committee was constituted of the following members :—

The Hon'ble Mr. H. C. Ferard, C.I.E., Commissioner, Lucknow, *President*.

The Hon'ble Babu Rai Ganga Prasad Varma Bahadur, vice-chairman of the Lucknow municipality. (Population 240,000.)

The Hon'ble Pandit Moti Lal Nehru, member of the Allahabad municipal board. (Population of municipality about 159,700.)

The Hon'ble Munshi Asghar Ali Khan, Khan Bahadur, appointed chairman of the Bareilly municipality. (Population 117,521.)

Nawab Asadulla Khan, Khan Bahadur, vice-chairman of the Meerut municipality (Population 76,351.)

Mr. A. B. Forde, Deputy Commissioner of Lucknow, and chairman of the Lucknow municipal board.

Mr. G. G. Sim, appointed official whole-time chairman of the Cawnpore municipality. (Population 175,000.)

Mr. H. S. Crosthwaite, appointed official whole-time chairman of the Allahabad municipality.

The committee (excluding the President) was thus composed of—

(1) The official chairman and the non-official elected vice-chairman of one large municipality, (Lucknow) and the elected

* Report by the President of the Committee convened for the purpose of considering the best method of modifying the United Provinces Municipalities Act (Act I of 1900) for the purpose of permitting of the extension with necessary safeguards of the system of non-official chairmen to the larger municipalities.

non-official vice-chairman of another municipality (Meerut) in which the old system of having the District Magistrate as chairman still obtains.

(2) The official chairmen of the two large municipalities (Allahabad and Cawnpore) in which the system of having whole-time official chairmen appointed by the Government has been introduced, and an elected member of one of the municipalities (Allahabad).

(3) The appointed non-official chairman of one municipality (Bareilly.)

Mr. Sin acted as secretary.

3. *Election or appointment of chairmen.*—A note showing briefly the subject-matter for the consideration of the committee was read and the first question discussed was whether if the system of non-official chairmen of the larger municipalities be introduced, the chairmen should be appointed or elected.

There was a majority comprising all the official members and the Hon'ble Pandit Moti Lal Nehru in favour of *elected* non-official chairmen, on the ground that a chairman elected by a board or a majority of a board would have a more popular backing and would be more loyally supported by the board than any person appointed by the Government. The dissentients were Babu Ganga Prasad Varma, whose experience is entirely confined to a municipality where the conservative system of an appointed official chairman with a competent non-official vice-chairman has worked extremely well; and the two Muhammadan members, one of whom is himself an appointed chairman and satisfied with the system, and the other is the vice-chairman of a board of which the District Magistrate is chairman. The opinion of the minority is a compliment to the systems of the past, but the President agrees with the views of the majority as consonant with the principle of local self-government. The Government should retain the power of vetoing the election of an unsuitable chairman,

a power which it has under the present Act, and which is not proposed for alteration in the draft of the new Bill.

4. *Safeguards to the system—The Bombay Corporation system.*—The next question discussed was that of safeguards to the system. There was an unanimous opinion, with which the President agrees, that it would be impossible to introduce into this province in its complete form, either the system in force in Bombay city or the system (modelled on the Bombay Corporation system) which the Bombay Government are proposing to introduce in the large outlying municipalities of that presidency to replace the system under the Bombay District Municipalities Act. It was generally agreed that something on the lines of the Bombay District Municipalities Act should be introduced here.

The President agrees with this view, as he is convinced that municipal boards would not accept willingly, and that it is undesirable to force them to accept, complete separation of deliberative and executive functions and to divorce the boards from all share in the latter as proposed in the latest development of the Bombay system. That system might have been successfully introduced originally, but municipal government in these provinces was started and has developed on different lines and the boards would now strongly resent total exclusion from executive functions and control, nor is there clear need here for going so far.

5. (a) *An executive officer.*—It was however agreed that extensive delegation of powers, and in the larger municipalities at any rate, assistance in the shape of an executive officer is necessary for dealing with the mass of executive work. There were two dissentients only to this, namely, the Hon'ble Babu Ganga Prasad Varma, who thought that the difficulties of the non-official chairman might be met by an extensive delegation of powers to the Heads of departments, and Mr. fforde, who thought that it would be sufficient to provide that Government should have power to require a board to appoint

an executive officer only in cases where Government considers it necessary. All the members (including Babu Ganga Prasad Varma,) agreed that there was no objection to the provision in the Act taking this form. The President sees no reason to disagree with this view. Government should in the new Act take general power (which incidentally will cover small as well as large municipalities) to enforce appointment of an executive officer in cases where Government considers it necessary.

(b) As to the method of appointing and dismissing an executive officer, the committee were unanimous in the view that the executive officer should be appointed by the municipal board, subject to the approval of the Government, and (with one dissentient, the Hon'ble Babu Ganga Prasad Varma) that his removal by the board should also require the sanction of the Government. Babu Ganga Prasad Varma was of opinion that the board should be allowed to remove an executive officer on its own authority provided that two-thirds of the total number of members of the board voted for his removal; he represented that it is inadvisable that an executive officer should be retained in the service of a board if he has lost the confidence of two-thirds of its members. The President agrees with the view of the majority, which makes for security of tenure in a post where offence to individuals must occasionally be caused in the execution of duty. Boards may be sure that Government will not fail to listen to the request of a two-thirds or any other majority of a board for the removal of an executive officer on reasonable grounds. Government should have power to require removal of an executive officer who has proved unsuitable.

(c) *Method of delegation of powers*—There was a majority in favour of the view that the delegation of certain powers should be made compulsory in the Act itself with power to the boards to delegate such other powers as they might consider necessary. Mr. fforde went not so far and yet further,

holding that the Act should not attempt to specify powers to be compulsorily delegated as experience might show that the list was not complete and entail amending legislation : Government should take full power in the Act to compel delegation under rules, that though this would give Government unlimited power of enforcing delegation under rules the boards should trust Government : in fact the relations between them should be one of mutual trust. The Hon'ble Babu Ganga Prasad Varma agreed in part with this view, but would allow Government to enforce delegation only "where necessary to enforce efficiency in administration." Nawab Asadullah Khan agreed with Mr. Forde. Other members approved the theory, but anticipated difficulties in practice : that boards would not go far enough in delegating powers and Government would be chary of exercising compulsion : that therefore the Act should compel delegation of powers under certain sections when the case for delegation is obvious, and should empower the board in others.

The President thinks Government should, if possible, take wide powers of enforcing as well as empowering delegation, but that details should be left for the rules. He therefore agrees with the minority.

(d) *Control over staff*.—There was an almost unanimous opinion that questions concerning appointment and dismissal of employes (other than the executive officer, the engineer, the health officer, and the secretary) should not come before the board. Most of the members stated that in their experience much "lobbying" went on in regard to these matters, and that a board being a corporate body, where the sense of individual responsibility in matters of detail tends to become obscured, is not suited to deal with these questions ; that moreover it is essential if an executive officer is to have respect paid to his orders by the subordinate staff that he should have personal control over them and not be liable to have his orders regarding the dismissal of subordinates upset by the board. All members were in favour of allowing one

appeal. The general opinion therefore was that the Heads of Departments should appoint and dismiss men drawing Rs. 15 and under, an appeal from their orders to lie to the executive officer; that the executive officer should appoint and dismiss men drawing over Rs. 15, an appeal against his order to lie to the non-official chairman. The principal dissent came from Babu Ganga Prasad Varma. He would allow the executive officer to appoint and dismiss men drawing Rs. 10 and under only, an appeal to lie to the chairman; he would allow the chairman to appoint and dismiss men drawing from Rs. 10 to Rs. 20, an appeal against his orders to the board; and the board to deal with all the appointments and dismissals. Mr. Asadullah Khan accepted this, but with the limits raised to Rs. 15 and Rs. 30, respectively. The President agrees generally with the majority. The Hon'ble Babu Ganga Prasad's views are doubtless based on his experience in Lucknow, where the board accepts the recommendations in these matters of the official chairman, and where, as he states, no "lobbying" goes on. The President would raise the limit from Rs. 15 to Rs. 20 in view of the tendency of the scale of salaries to rise with the rise in prices. Heads of executive departments, such as engineer or health officer, should have power of appointment and dismissal up to Rs. 20 with an appeal to the executive officer, when there is one, or to the chairman when there is not: the executive officer, where there is one, to have the power in the case of subordinates drawing over Rs. 20 with appeal to the chairman. Where there is no executive officer, the chairman will have the power with appeal to the board: the powers will cover all minor punishments. This will represent a minimum of delegation to be embodied in the rules: it will be optional with the boards to widen the delegation with consent of Government.

(e) The views of the committee on delegation of powers under various sections of the Act are shown at page 7 of the attached summary. There was unanimity of opinion as to the necessity for delegation in the case of those relating to

routine matters which can obviously be dealt with by the staff without in any way infringing on the board's general control. There were, however, differences of opinion as regards sections 81, 85, 87, 88, 89, and 145 as follows :—

Section 81.—Building applications.—All members agreed that the power under clause (1) to receive applications and to call for plans, &c., and also the power under clause 4 (a) to stop unauthorised buildings, should be delegated to the executive staff. The official members would delegate to the executive staff the power to *sanction* buildings under clause 1, the cases going to the board in the case of refusal to sanction only; and they would also delegate the power under clause 4 (b) to require unauthorised buildings to be demolished. The Indian members differed. They consider the power to sanction buildings vests in the board or its building committee, and that the power to sanction buildings may be delegated by the board to the executive staff, but should not be so compulsorily; and similarly, in the case of power under clause 4 (b).

The President thinks that the latter view should be accepted in the rules. Thus applications and plans will come to the executive staff (ordinarily the executive officer). The building committee of the board will sanction them, unless the board chooses to delegate the powers of sanction to the executive officer. If it is so delegated and he refuses sanction, the case must go to the building sub-committee, whose decision will be final. If it is not so delegated, the building sub-committee, or the board if there is not one, will sanction or refuse and its decision also should be final. If unauthorised buildings are started, the executive officer will have the power to stop them under clause 4 (a), but not the power to order demolition under clause 4 (b), unless the power is delegated to him by the board: if it is not delegated to him, the building sub-committee, or the board if there is not one, would pass the order and its decision should be final (subject, of course, to outside appeal under section 149 of the Act).

Section 85.—Provision of dust bins, drains, and privies—The Indian members would not allow delegation of power under this section to the executive staff but would retain it with the board or its committee. The official members would not compel delegations but would allow the board to delegate.

The President sees no reason to oppose the wishes of the Indian members in this matter, but if the board delegates its powers to a committee, the decision of the latter should be final.

Section 87.—Removal of unauthorised buildings over drains, &c.—The official members and two Indian members would delegate the power to the executive staff. The other two Indian members would reserve it for a committee of the board.

Section 88.—Removal of latrines, &c., near water-supply.—Opinion is divided in the same way. The President would deal with cases under sections 87 and 88 similarly to section 85.

Section 89.—Removal of nuisances arising from tanks, &c.—All members agreed that power to issue notice should be delegated to the executive staff, except in cases when compensation is payable. Babu Ganga Prasad would reserve the power to the board. The President would deal with the cases as in the cases of 85, 87, and 88.

Section 145.—Board's powers in the event of non-compliance.—There were differences of opinion as to whether the executive staff should be empowered to act without further reference to the board in cases of non-compliance with a notice issued by the board. Non-official opinion was that a reference should first be made by the executive staff to a committee of the board: that this is necessary to prevent possible mistakes which may and do occur: official opinion was that it is useless to delegate to the official staff authority to issue notices without power of action in the event of non-compliance. There is force on both sides, and the President is unable to go all the

way with the official members, but the boards can, and probably will, delegate to the executive officer power of independent action, at any rate in cases where the notice has been issued direct by the board or its sub-committee, and require a reference in cases where the notice has been issued by the executive officer in the exercise of delegated power.

Artificial Immunity against Typhoid Fever.*

How Mortality of a Dread War Disease has been reduced.

[BY A. M. JUNGMAUN.]

THAT immunity against typhoid fever as conferred by vaccination has been a highly successful measure of preventive medicine cannot be denied. An example of this may be seen in the armies fighting to-day in Europe. During the Franco-German War thousands upon thousands of soldiers died from typhoid fever. The freedom from this disease in the present conflict is due in part to a better understanding of the principles of sanitation, and a great deal of it is due to the work of the man in the laboratory. Years of painstaking laboratory research work has resulted in the production of a vaccine, which is saving the armies of the world from the typhoid fever epidemics.

During the year 1911 typhoid vaccination was made compulsory in the United States Army, and a striking example of the value of this vaccination may be seen in the fact that in 1912 the death-rate from typhoid fever in the United States was 16.5 per hundred thousand and in the United States army the rate was 0 per hundred thousand.

In 1896 the results of experiments in the prevention of typhoid fever by vaccination with bacillus typhosus killed by heat were published by Wright of Netley, England, and by Pfeiffer and Kolle in Germany. But even before the publi-

* Reprinted from the *Scientific American*.

cation of the results of these experiments, which oddly enough came out almost at the same time, another group of scientists had been engaged in a series of experiments which they hoped would result in a vaccine which would produce immunity against typhoid fever. Among these were Frankel, Dunbar, Simmons and Stern.

The use of this prophylactic measure was not entirely successful at first, partly because the amount of the dose was not properly worked out, and partly because the vaccine was subjected to too much heat. Leishman, who had been working with Wright discovered that the vaccine had been superheated, and as soon as this fault was corrected a notable improvement in the results obtained was observed.

After an attack of typhoid fever certain substances appear in the blood of the patient which are known as antibodies. The presence of these antibodies renders the patients immune from a subsequent attack of the disease. It is the object of the vaccination to produce these defensive substances in the blood. It should be borne in mind, however, that the vaccine is a preventive of typhoid fever, and not a typhoid antitoxin, and that once the incubation period of the disease has begun it is too late for antityphoid immunization.

There have been a number of different methods employed in the preparation of the vaccine. Metchnikoff used a vaccine made of an emulsion of living typhoid bacilli, sensitized by antityphoid serum. This has been used successfully by both Metchnikoff and Besredka, a pupil of Metchnikoff. Russel in the American army, and Leishman in the British army, have employed a single strain of low virulence. In France a polyvalent vaccine of as many as ten strains has been used. Chantemesse has made an antityphoid serum which has not won the approval of the others. This serum he obtained from horses.

It is generally believed that it is best to use the sterilized single strain of low virulence which has been employed with

such satisfactory results in the prevention of typhoid fever, both in England and in the United States.

The New York City Board of Health prepares a culture in its research laboratory which is very similar to that used by the Army. Persons desiring to be inoculated can do so free of charge by applying at the Department of Health. Almost two thousand were so vaccinated last year.

A laboratory culture of typhoid bacilli which has been artificially cultivated for a long time, so that it has lost much of its virulence, is employed in making the vaccine. Agar which has been placed in Blake bottles is inoculated from fresh agar cultures. The bottles are then set aside in a temperature of 37 deg. Cent. to permit the bacteria to multiply. After twenty-four hours for growth has been allowed the bacteria are washed from the surfaces of the agar with a normal salt solution. Now comes the standardizing of the suspension. By this is meant counting the number of organisms per cubic centimeter so that the dosage may be accurately controlled. At first thought it seems well nigh impossible to count such minute organisms as these bacteria, but Wright devised a means which is accurate and at the same time strikingly simple.

Starting with the fact that there are 5,000 million red blood cells per cubic centimeter, Wright evolved a method of counting the bacteria by comparison. A capillary tube is marked at a convenient point with a wax pencil, then from a finger prick a drop of blood is sucked up on to the tube to the mark. Then the same amount of bacterial suspension is drawn into the tube with an air bubble between the blood and the bacterial suspension. Next the two fluids are ejected from the tube on to a glass slide and are thoroughly mixed by being drawn into the tube and expelled on to the slide a number of times. The mixture is finally spread on a number of slides in the ordinary manner of making blood smears. The smears are stained and examined with a microscope having ruled eye-

piece. In looking through the microscope the organisms and the blood cells are seen in square fields. It is a very simple matter to count the number of red blood cells and the tiny straight bacteria in each field. After a number of fields have been counted the number of bacteria per cubic centimeter can be calculated.

When the proportion between the number of bacilli and blood cells has been determined the suspension is heated for one hour at 56 deg. Cent., which kills the bacilli. The matter of heating is of the most importance. It was not until the exact temperature for the purpose of killing the bacteria was determined, as well as the length of time the suspension should be heated, that the vaccine attained its present success.

After the heating process comes the test for the sterility of the suspension. This is accomplished by inoculating sufficient amounts into media, and incubating these under both aerobic and anaerobic conditions. When the sterility has been indisputably determined by the absence of any growth, 0·25 per cent. of carbolic acid is added to the suspension, which is diluted with 0·25 per cent. carbolic acid in normal saline solution so that one cubic centimeter contains the appropriate dose.

Now that the vaccine is ready for use it is bottled for distribution. Some is put up in liter bottles and some is put in sets of three small bottles, each set comprising the three doses required for inoculating a person against typhoid fever. The vaccine is kept in a refrigerator until it is used.

When antityphoid vaccination was first introduced it was generally believed that a single inoculation was sufficient to render the subject immune. But before long it was found that one dose gave insufficient protection. The accepted practice to-day is to administer three inoculations at intervals of from seven to ten days. The first dose for an adult is 500,000,000 bacilli, while the second and third doses consist of 1,000,000,000 bacilli. It has been found that persons who

are vaccinated at about four o'clock in the afternoon suffer little inconvenience, as the reaction takes place while they are in bed. It is well for business persons to receive the injections on successive Saturdays. The fluid is usually injected on the outer surface of the arm at about the insertion of the deltoid muscle. Some physicians inject the vaccine under the skin of the chest wall. The dose administered to children is graded according to the weight of the child. For example, a child weighing fifty pounds would receive one half the dose given to a grown person.

Whatever discomfort caused by the reaction subsides in twenty-four hours. Sometimes the reaction is very slight, consisting merely of a tenderness near the site of injection, and again it may consist of headache, malaise and a rise in temperature several hours after the inoculation. In only one per cent. of the patients injected has a more severe reaction been observed. Vaccinated persons who contract the disease stand a much better chance of recovery than do the unvaccinated ones.

War and Economy.

[According to "The Sheffield Daily Telegraph", the Education Committee of the City Council decline to study economy.]

With abject appeal to the shade of Milton.

Hence, loath'd Economy,
 Of Thriftiness and Parsimony born,
 In miser's den forlorn,
 Where dust and dirt enjoy complete autonomy !
 But come, thou girl with golden glance,
 By some men called Extravagance ;
 Haste thee, nymph, and bring with thee
 Irresponsibility,
 Whom, with saucy face oblique,

Lightsome laugh and simple cheek,
 Thumb extended from her nose,
 In a light fantastic pose,
 Every critic pen derides,
 And the folk who pay, besides.

And ever, 'gainst corroding cares,
 Lap us in official airs,
 Married to a haughty speech
 (As when new-made curates preach)
 With epithets in winding bout
 Of clotted nonsense long drawn out,
 Such as men may fancy witty
 (Men at least on our Committee.)
 Then Midas' self shall rear his head,
 By kindred taste and fancy led,
 And dim his eyes with thankful tears,
 Beholding our resemblant ears !

Aid us thus, and we can laugh
At the Sheffield Telegraph.—Punch.

Local and Municipal Notes.

[Bombay.]

Nasik Municipality.

L OAN FOR WATER SUPPLY PROJECT.—The Nasik Municipality has applied to the Government for a loan of Rs. 50,000 to meet the excess over the sanctioned estimates for the water-supply project. The loan bears interest at 4 per cent. per annum and is to be repaid within 20 years' time in equal annual instalments.

[Bengal.]

Corporation of Calcutta.

REPRESENTATIVE IN THE LEGISLATIVE COUNCIL.—The Corporation elected Babu Ramtaran Banerjee to represent them in the Bengal Legislative Council in place of Raja Dinendra Narain Roy, deceased.

Nadia Municipality.

CHANGE OF NAME.—On the recommendation of the Commissioners of the Nadia Municipality in the district of Nadia, made at a meeting, the Governor in Council has directed that the Municipality be henceforth called the Nabadwip Municipality.

[Madras.]

Nellore Municipality.

MUNICIPAL ELECTION RULES.—The Nellore Municipal Council passed the following resolution with regard to the draft Municipal Election Rules published by Government:—The Council request the Government to put off the consideration of the rules of election till after the general amendment of the District Municipalities Act in pursuance of the recommendations of the Decentralisation Commission is taken up.

[Punjab.]

Simla Municipality.

ACQUISITION OF SITES.—The Municipal Committee of Simla has submitted to Government an application for a loan of Rs. 1,30,000 for acquisition of sites of shops on the Mall damaged by fire in April, 1915. The loan is repayable with interest at 4 per cent. per annum after six months from the date on which the loan is given.

[Burma.]

Rangoon Municipality.

ASSESSMENT AND TAXATION.—At a recent meeting of the Rangoon Municipal Committee, the Hon'ble Mr. Cowasjee moved that "with a view to giving effect to certain suggestions contained in the report of the Assessor on the systems of assessment and taxation in force in the various towns of India, the following alterations and additions be introduced in the system of municipal taxation of this town:—

(1) That mills and factories in municipal limits be assessed on the same system as that in force in the Indian Presidency towns, *viz.*, the omission from consideration of all machinery when arriving at the assessment.

(2) That the aggregate rate of municipal taxation be reduced from $23\frac{1}{2}$ per cent. as at present to 18 per cent.

(3) That the terminal tax be introduced on certain commodities and articles brought within the municipal limits of this town, on the lines of the tax in force in Karachi, as set out in the Assessor's report, and that the rate of this terminal tax be so adjusted on the various commodities and articles, that the tax may amply cover the deficit created in municipal revenues by resolutions (1) and (2).

(4) That a fire brigade tax be introduced to meet half the expenditure on the maintenance of the fire brigade in this town, the total expenditure on which is at the present time defrayed from general funds: that the rates of the fire brigade tax be so adjusted as to vary in proportion to the risks involved by the various classes of buildings, as imposed in Calcutta.

(5) That immediate steps be taken to amend our present Act, in order to give effect to the above resolutions."

After a lengthy speech by the Hon'ble Mr. Cowasjee in support of his proposals a debate followed, and the proposals on being put to the meeting were *negatived*, three members voting for the proposals and the rest against.

Public Health and Sanitation.

Intemperance and the Public Health.

A recent conference of health officers, (Indiana) a resolution was adopted unanimously declaring that health officers and physicians should join in the campaign against alcohol.

A diminution in the consumption of alcohol by the community, according to those who are in a position to know and to judge, would mean less tuberculosis, less poverty, less dependency, and less pressure on our hospitals, asylums and jails. Intemperate drinking cuts into the support of the family. The drinking of parents weakens the vitality of children. Drinking mothers lose twice as many babies as do sober

mothers. More alcoholism is found in the parents of feeble-minded children than in the parents of normal children. The children of drinkers develop more slowly and do poorer school work than do the children of abstainers. Alcohol impairs the tone of the muscles, lessens the product of labourers, depreciates the skill and endurance of artisans, impairs memory, multiplies industrial accidents, causes chronic disease of the heart, liver, stomach, and kidneys, increases the death-rate from pneumonia, and lessens natural immunity to infectious diseases.—*From the Weekly Bulletin of the Department of Health, City of New York.*

Room Comfort.

Heating and ventilation appear to offer a good field for scientific development, as we are told that even the temperature best for us is not yet settled. In a late paper to the London Society of Engineers, Mr. A. H. Barker pointed out that what we think give us comfort may vary widely and that our sensations are a very unreliable test. Air shown to be chemically impure may feel fresh and sweet, while pure air may have a different effect within wide limits. The chemical composition of the air has no importance but its temperature and humidity concern us and the freshness of air in a building depends on keeping the air temperature relatively low and the radiant temperature high. The thermometer hanging in a room is not a certain guide to the temperature of the surrounding air or to the comfort of the room's occupants.—*Pop. Sc. Sift.*

Effect of Slum Dwellings on Public Health.

Dr. A. M. N. Pringle, Medical Officer of Health for Ipswich, in his annual report, makes some strong comments on the effect of slum dwellings on the public health. After giving statistics of the local birth and death-rates, Dr. Pringle states that public health work must not be judged by death rates alone, and adds: "It always strikes one as rather pitiable that fanatical advocates of crack brained schemes of eugenics, vegetarianism, teetotalism, etc., in short, the whole egregious sisterhood and brotherhood of anti's should devote

their energies to the pursuit of futile side issues, when there is ready to hand a great field of endeavour in the worthy and practical object of teaching the public the real meaning of a healthy life. On this subject ignorance is profound—abyssmal. This ignorance is not the monopoly of the slum dweller. It permeates all classes of society. It is as much the possession of the ignorant as the educated. It is as prevalent amongst the rich as poor, and it poisons the mind of the whole community. Corporations are not free from its blighting effects, and the measure of their fault is the sanitary condition of their area. There are many towns in this country with an infant death-rate in excess of 150 per 1,000 births. The cause is ignorance and the fault must be laid at the door both of the governed and the governors. The realisation of a healthy existence involves the passing of the slum, no doubt, but it means much more than that. There are innumerable people who will produce slum conditions wherever they choose to live. Whilst all will agree that slum must cease to exist, and that steps should be taken to deal with the problem as soon as opportunity occurs, yet war must be declared upon the type of individual who makes slums from choice. The present generation of this type, of course, is hopeless. They are too steeped in ignorance, stupidity, and filth to recognise that even in their own street they are shunned by their decent neighbours. I know of plenty of poor families in Ipswich who never think of entering their next door neighbour's house. In the one case the house will be as clean and as well kept and managed as could be wished. In the other the conditions are filth and degeneracy. The wages may be the same, the rent the same, and the family the same in number. The one difference is the type of the people. The slum type can only be got at through the children. If the child be taught, he may perhaps, when removed from the vicious influence of the home-circle, start upon better lines. The removal of slums is a difficult business; though we all agree in principle; but the eradication of the slum type is a proposition demanding the

most strenuous activity on the part of everyone who has the least interest in the future of the race. It is more than ever vital when the country is being drained of all that is best.—*Local Govt. Jour.*

Economy in the Maintenance and Repair of Highways.

[By W. MAXWELL, ASSOC. M.INST.C.E.,
BOROUGH SURVEYOR, TUNBRIDGE WELLS.]

THE curtailment of expenditure in the maintenance and repair of highways can seldom be safely regarded as true economy, but is really only a deferred expenditure shelved at compound interest, for succeeding years. If needful repairs are too long postponed, in many cases the foundations of the roadways become weakened and so badly cut into and water-logged as to involve heavy expenditure in renewal, only to be avoided by the timely maintenance of the wearing surface or crust.

In suitable cases where a sufficient thickness of surface metalling is known to exist, some saving can sometimes be effected by scarifying up the worn surface, and again consolidating by rolling, with the addition of a small amount of road metalling of a similar quality. This will result in a saving of new material, while the labour bill will not be affected. At the present time economy of material is of first importance in view of its greatly enhanced price and difficulties of transit by rail. Haulage to the various roadways is also increasingly difficult and expensive, owing to the shortage of horses, tractors, and labour due to war requirements.

Tar-painting road surfaces.

In the case of roadways of light residential traffic, cul-de-sac, and such like, considerable saving is possible by tar-painting the surfaces when in a good state of repair, as, under suitable conditions, such surfaces will give satisfaction for several years at little or no expense.

Tar-painting is a specially advantageous and economical mode of treatment on light trafficked roadways as above and upon moderate gradients, as it prevents the disintegration of the roadway by excessive drought or heavy rain, stops the growth of weeds, and minimises scavenging costs.

On roadways subjected to much traffic the saving is not so marked, as the coating of tar has a much shorter life, but even here there is an undoubted economy in road metalling and a welcome reduction of the dust trouble in fine weather.—*Surveyor.*

Laying of Sewer Pipe.

[The adoption of the following practice for the laying of sewer pipe was recommended by a Committee of the American Society for Testing Materials at the annual meeting of that body recently.]

THE foundations in the trench should be formed to prevent any subsequent settlement and thereby a rupture of the pipes. If the natural foundation is rock, it is recommended that an equalising sand bed be placed upon the rock and well compacted by watering or otherwise so as to obviate irregular settlement. If the natural foundation is good firm earth, the earth should be pared and moulded to give a full support to the lower third of the pipe. Otherwise the bed should be made firm, either by sand well watered or rammed, or by a layer of cement mortar. The same means of securing a firm foundation should be adopted in case the excavation has been made slightly deeper than necessary.

If there is no good natural foundation, a firm and sufficiently broad bed should be artificially made either with sand, with gravel or broken stone, with concrete, reinforced concrete, or other means to secure a solid and firm foundation.

If the soil is porous and ground water rises above the sewer pipe, a plank foundation with or without piles may be required.

When the sewer is to be laid in a concrete cradle, the concrete for the full width of the cradle should be continuously deposited to the height of the outside bottom of the pipe. Before the concrete has set, the pipe shall be evenly bedded therein and the remainder of the concrete immediately placed on each side of the pipe and carefully tamped in such a manner as to avoid disturbing its position. Or the pipe may be supported and held in position by wedges and templates, and the concrete mixed wet, and poured under and around it in such a manner as to complete the cradle in one operation.

When the sewer is to be laid in a gravel or broken-stone cradle the material should consist of clean gravel or sound broken stone, all of which should preferably pass through a screen of 1 inch mesh and be retained on one of $\frac{1}{8}$ inch mesh. The gravel or broken stone should be deposited and consolidated for the full width of the trench to the height of the outside bottom of the pipe. The pipe should then be bedded therein and the remainder of the gravel or broken stone deposited and carefully consolidated in such a manner as to avoid disturbing the position of the pipe. The cradle should in all cases be so constructed that an undue proportion of the load shall not be borne by the hubs.

If the trench is situated in ground water, it is recommended to lay the pipe in a concrete cradle up to the springing line.

When a sewer is to be laid without a cradle, the earth forming the bed should be carefully freed from stones and organic material. The pipe should then be evenly bedded therein, the joints properly made, and the back-filling placed and firmly tamped in such a manner as to avoid disturbing the position of the pipe.

When pipe is laid in soil which is not sufficiently firm to carry it, the earth or soil should be removed, and sufficiently broad foundations and retaining supports substituted.

When pipe is to be laid in a new embankment, the fill-up to a point over the springing line of the pipe should be deposited in layers not exceeding 6 inches and thoroughly consolidated by rolling, ramming, tamping, watering or a combination of these, depending upon the nature of the filling material, whether it is clay, sand, gravel or a mixture of these.

If a pipe line is situated on one side of an embankment where the soil is liable to lateral movements, and is thus subjected to a one-sided load or pressure, care must be taken to secure a stable foundation, so that the pipe line will not be moved on its bed. A retaining support should be placed at the side having the less pressure. It should be made of suitable material, of proper height or weight, to transfer to the foundation the excessive lateral earth pressure, without danger to the stability of the pipe line.

Trenches should be kept free from water until the material in the pipe joints has hardened sufficiently so that the pipe line will be continuous and strong.

The stresses produced in pipe by the back-filling will differ according to the conditions of the soil. In self-sustaining soil it is possible to lay pipe at a considerable depth without producing excessive stresses. In soil which permits of lateral movement, or which is water-carrying, special precautions are necessary.

To protect pipe lines from unusual stresses all work should be done in open trenches. Tunnelling should be prohibited, except with the special consent of the engineer.

Pipe lines should be placed at such a depth below the surface of the street that dangerous pressure or impact cannot occur. If it is not possible to do this, special reinforcement is required.

Rock excavation should be made to a depth of at least 4 inches below the outside bottom of the pipe, or as shown on the plan.

Width of trenches in earth should be sufficient to provide a free working space of from 6 to 12 inches, exclusive of spurs and hubs, according to the size of the pipe and the character of the ground.

The width of trenches in rock should be sufficient to provide a free working space of 12 inches on each side of the pipe exclusive of spurs and hubs.

In every case there should be sufficient space between the pipes and the sides of the trench to make it possible to thoroughly ram the back-filling around the pipe and to secure tight joints.

If soil conditions and ground water require the use of sheeting, sheet piling and bracing, the trenches should be made correspondingly wider. The sheeting should be closely driven, and to such depths as the soil conditions may indicate.

Steel sheeting may be used with advantage where the flow of ground water into the trenches is excessive and the stability of the foundation soil and of the sewer is affected thereby.

Where a trench for a proposed sewer or extension of a sewer terminates in rock, it should be excavated for a distance of not less than 5 feet beyond the end of the sewer and in the direction of the proposed extension. The pipes and all other structures should be carefully protected from the effects of blasts.

Pipe Laying.

The laying of pipes in finished trenches should be commenced at the lowest point, so that the spigot end points in the direction of flow.

All pipes should be laid with ends abutting and true to line and grade. They should be fitted and matched so that when laid in the work they will form a sewer with a smooth and uniform invert. Unless otherwise permitted or directed, not less than 20 feet of pipe sewer should be laid in one operation.

It is necessary to use all possible care when shoving the pipes together, so that mortar will not be shoved into the hub or the joint be unnecessarily large.

Sockets should be carefully cleaned before pipes are lowered into trenches. The pipes should be so lowered as to avoid unnecessary handling in the trench. After the end of the pipes have been sufficiently wetted, the hub end should receive upon its lower half a layer of mortar composed of 1 part of Portland cement to 1 or 2 parts of fine sand.

The pipe should be set firmly according to line and grade, and the joint carefully adjusted, filled with mortar and finished to a smooth bevel outside. The inside of the pipe should be then cleaned of dirt and mortar refuse. In small pipes the inside should be made smooth by a hand swab. Large pipes should be laid with block and tackle, and bar and tongs.

Gasket and mortar joints should be made in the following manner: A closely twisted hemp or oakum gasket of suitable diameter, in no case less than $\frac{3}{4}$ inch, and in one piece of sufficient length to pass around the pipe and lap at the top, should be solidly rammed into the annular space between the pipes with a suitable caulking tool. Before being placed the gasket should be saturated with neat cement grout. The remainder of the space should then be completely filled with plastic mortar mixed 1 : 1, and the joint wiped inside and finished to a smooth bevel outside.

Where butt or bevel joint pipes are used, the following method of joining is recommended: After a layer of mortar about 8 inch wide has been prepared at the joints, a wire netting is spread upon the same and covered with a layer of mortar about 1 inch thick. Upon this wire netting, which is embedded in the mortar, forming a bandage, the pipes are laid and adjusted according to line and grade. The bandage is then raised on both sides of the pipe, bound at the top, and covered with a layer of strong cement mortar at least 2 inches thick. The inside of the joint is finished in the same manner as specified for hub-and-spigot pipes.

The ends of pipes which enter masonry should be neatly cut to fit the face of the masonry.

No pipe or the cradle thereof should be laid or placed until the sub-grade of the trench has been tested and found correct.

In deep cuts, in high embankments, or in poor soil, it is recommended to use especially strong pipes or concrete reinforcement.

The smaller sizes of cement or concrete pipes should preferably have flat bases. If of sufficiently large diameter, they may be reinforced.

When mortar or concrete are to be mixed or placed in freezing weather, the following precautions are advised: No concrete should be laid when the temperature of the air is below 24 deg. Fahrenheit. When the temperature is between 24 and 32 deg. Fahrenheit, and rising, the mixing water should be heated to a suitable temperature, or, if directed, 1 per cent of salt, by weight, should be added for each degree of Fahrenheit of air temperature below 32 deg. Fahrenheit. Under such conditions other materials for concrete and mortar should all be heated.

Back-filling Trenches.

All trenches and excavations should be back-filled immediately after the pipes are laid therein, unless otherwise directed. The back-filling material should be selected and deposited with special reference to the future safety of the pipes. Clean earth, sand or rock dust should be used up to a level at least 2 feet above the top of the pipe. This material should be carefully deposited in uniform layers about 6 in. in depth. Unless otherwise permitted, each layer should be carefully and solidly tamped or rammed with proper tools, so as not to injure or disturb the pipe line. The back-filling material for the remainder of the trenches should contain no stones over 10 inch in their largest dimensions, should be spread in layers, and thoroughly consolidated by tamping or other-

wise as the engineer might direct. Stones which are used in back-filling should be so deposited through the mass that all interstices are filled with fine material.

Where the safety and stability of the pipe line and other structures render it necessary, sheeting should be left in place, particularly below the top of the pipe.

When sheeting is withdrawn, all cavities remaining or adjoining the trench should be solidly filled. When the sheeting is left in place, all cavities behind such sheeting should be solidly filled.

For retaining back-filling temporarily, timber bulk-heads may be used. They should be removed as the trenches are back-filled.

Puddling or water flooding for consolidating the back-filling is recommended only for sandy and gravelly materials. If this method is used, then the first flooding should be applied after the back-filling has been compacted by tamping up to the springing line of the pipe, and the second flooding during or after the subsequent filling of the trench. An excess of water should be avoided, in order to prevent disturbance of the earth under and around the pipe, and also to prevent an undue excess of pressure on the pipe.

Walking or working on the completed sewer, except as may be necessary in tamping or back-filling, should not be permitted until the trench has been back-filled to a height of at least 2 feet over the top of the pipe.

Where a one-sided pressure exists, due to unbalanced loading, the filling of the trench should be carried on simultaneously on both sides and in such a manner that injurious side pressures do not occur.

In freezing weather back-filling should not contain any frozen lumps of earth below a level at least 2 feet above the top of the pipe.

Water Supply.

Sterilised water in the home.

THE electric sterilisation of water intended for domestic drinking purposes has been the subject of considerable attention and development during the past few years; but unfortunately the prevailing type of apparatus for achieving such a desired end has suffered from the disabilities of being expensive and somewhat too complicated for the average household. Now, however, a small British-made domestic ozone steriliser has been placed on the market. It occupies little space and is completely automatic in its action. The sterilising plant which is contained within a small neatly designed metallic case is attached to the wall and has a certain portion inserted in the water main, while below is a small swivelling tray upon which the jug, glass, or other desired receptacle may be placed beneath the tap. The apparatus may be attached to any water-supply system and will work efficiently upon a delivery varying from $\frac{1}{2}$ to 50 pounds per square inch. When the tap is turned on, the apparatus is set in motion, the water being sterilised as it passes to the tap while when the tap is turned off the process ceases. Of course, an electric circuit is necessary from which to draw the requisite current; but owing to the simple automatic action incorporated, there is no waste of entire energy, the consumption of which is very small. Ozone is admitted to be the finest sterilising agent it is possible to employ for the purification of water, and upon the continent it has had an enormous vogue but in Britain it has been adopted only upon a limited scale.

Water-supplies from polluted areas.

Among the papers read at the last Provincial Sessional Meeting of the Royal Sanitary Institute held at Brighton was one by Major G. C. Murison on the use of storm water drains to ensure safe supplies being obtained from polluted catchment areas. Major Murison said the question was not of common

occurrence, and so the ordinary books of sanitary science did not even mention it; still, in his opinion, it was of interest to the sanitarian. In order to describe this subject he could not do better than briefly enumerate the several points which had to be taken into consideration in a place where very shortly a storm water drain for the above stated purpose would be constructed. The place was Matheran, a small station situated on the top of a hill, which rose very abruptly from the plains and was quite separate from any other hill. The hill consists of Deccan trap rock overlaid with a crust of laterite. The former was an igneous rock, and was impervious to water, while the latter was a form of sandstone with a certain amount of iron, and was pervious to water. In the valleys the laterite crust got thicker. There was no other alternative but to make use of the existing water-supply, which consisted of upland surface water. The water was stored in an artificial lake, which was formed by a dam having been built across a valley on the unpervious Deccan trap rock. The catchment area was thickly covered with trees and undergrowth, and had bungalows with servants' out-houses, including privies, built on it, and consequently it was very insanitary. Owing to the smallness of the Municipal district, the compounds of the bungalows could not compulsorily be acquired with the object of razing the bungalows with their out-houses to the ground and excluding the public from the catchment area. The average rainfall was about 200 inches annually, and about 175 inches of this fell during the monsoon months, from about June 15th to September 30th. During the monsoon months, owing to the heavy rain and mist, most of the people left the hill for plains. The water of the lake had been reported on by the analyst as non-potable owing to sewage contamination. This report had also been passed on the water collected from the entrance streams of the lake when running at all times of the year, except during the period from shortly after setting in to the finish of the monsoons, when it had been passed as "a good sample of potable water". The reason for this difference in the

analytical report was that, owing to the very heavy rainfall, the sewage and the other filth on the hill got washed away during the early part of the monsoons, leaving the hill quite clean. There was no spring directly opening into the lake, though there was a spring in the valley of the main feeder of the lake, but it was quite 150 yards above the lake. With these facts before them the only way of improving the water-supply was to keep out of the lake the contaminated water, and to allow into the lake only the non-contaminated water. This could only be done by constructing above the lake on all sides of the hill and across the valleys a wall of solid impervious rock masonry on the impervious Deccan trap rock, and thus forming a drain to prevent any water from passing into the lake, this wall to be below the spring mentioned. In the valley of the chief feeder stream a double sluice would be provided in the wall, so that if any water escaped through the first sluice it certainly would be stopped from passing into the lake by the second one. He might state that the two sluices referred to would only be opened during the monsoons to allow the water (when it was potable) into the lake. The conclusions to be drawn from the foregoing statement of facts were that the following conditions must be present for this system to be efficient :—(a) The locality must be subject to seasonal rains like the monsoons. (b) In such places during a certain period of the seasonal rains the catchment area must be free from pollution by either the public leaving the hill as is the case in several places in India, or the public excluded from in any way using the area. (c) The storage lake or reservoir must have no spring opening directly into it. (d) The storm water drain must be constructed in impervious strata, and thus any leakage into the lake prevented.

Mr. H. Percy Boulnois (Westminster), in proposing a vote of thanks to the reader of the paper, said that without plans and sections it would be difficult to criticise the methods adopted for ensuring pure water. The paper really said nothing about storm water drains, in spite of its title; the

method which apparently was adopted was to shut off the whole of the surface water in the neighbourhood of the lake, and only admit other water, the source of which he could not gather. On the face of it the simplest plan appeared to be to drain the houses and to deal with the drainage on modern lines. With a large, scattered population it would have been cheaper than going to the expense of an enormous dam. As we did not have monsoons, this class of engineering did not obtain here, but they were extremely obliged to Major Murison for his paper.

Major Murison, in replying said Mr. Boulnois could take it from him that they had adopted the cheapest method in constructing the dam, for, owing to the habits of the people, the forest itself was nothing but a public latrine. Drainage, therefore, was next to impossible.

Government Orders and Notifications.

Health Officers for Municipalities.

[Madras.]

THE Government are pleased to sanction the employment of Health Officers in the Municipal towns of Madura, Trichinopoly, Ootacamund, Tuticorin, Calicut, Cocanada, Rajahmundry, Salem, Tanjore, and Negapatam. The Health Officers in the case of the Madura and Trichinopoly Municipalities will be of the first-class and will draw salaries of Rs. 300—20 (annual)—500 per mensem with a conveyance allowance of Rs. 25 per mensem. The Health Officers in the case of the other municipalities will be of the second class and will draw salaries of Rs. 150—10 (annual)—300 with a conveyance allowance of Rs. 25 per mensem. The Councils will bear a fourth of the cost of these officers, the balance being met from Provincial funds. In view of the small population involved, the Government are unable to accede to the Ootacamund Municipal Council's request for a first-class Health Officer,

2. The Health Officer's position and functions will be those of a highly-trained administrative head of the Health Department of the Municipality, and it will be for him to direct, organize and improve the work of the whole sanitary staff. He should not be regarded as taking the place of a Sanitary Inspector but as a controlling officer. All Councils concerned will be requested to submit as early as possible proposition statements for the employment of Health Officers.

3. As regards the retention of the services of the persons now employed as Chief Sanitary Inspectors, the Government have come to the conclusion that this is a matter which must be left to the decision of the Councils concerned on consideration of the adequacy of their staff of Sanitary Inspectors for the work to be performed in the Municipality. Whether, if a reduction in the staff is feasible, the officer whose services should be dispensed with should be the Chief Sanitary Inspector or some other Sanitary Inspector and whether, if it is decided to retain the person now employed as Chief Sanitary Inspector, he should receive his present salary or a reduced salary are also matters in regard to which the Government do not wish to fetter the discretion of the Municipal Councils. It must however be clearly understood that any individual Chief Sanitary Inspector who is retained will no longer be so styled, but will for the future hold the position and do the work of any other Sanitary Inspector : he will thus form an addition to the ordinary sanitary staff.

4. The qualifications required for appointment as Health Officers are set forth below :—

First-class Health Officers.—A medical qualification registrable under the British Medical Act and a British Diploma of Public Health.

Second-class Health Officers.—A minimum qualification of L.M. & S. degree and a certificate of having undergone the practical training prescribed in G.O. 1108 L., dated 16th June 1914.

5. The Sanitary Commissioner is requested to prepare and maintain a list of persons qualified to act as Health Officers of the first and second classes. Health Officers will be selected from this list. Chairmen of Municipal councils concerned are requested to submit for the approval of the Government as early as possible nominations for the post, chosen from the list to be drawn up by the Sanitary Commissioner.

6. Rules regulating the powers and duties of Health Officers and their relations with Municipal Chairmen will issue separately. [G. O. No. 1568 M., dated 29-9-1915.]

**Aid to institutions managed by members
of hostile nations.**

It has been decided that, as a matter of general policy, it is not proper, during the war, to continue to subsidize institutions directed by members of nations with whom hostilities are in progress and that unless there are exceptional reasons to the contrary such grants should now cease. This principle is also applicable to subsidies given from public funds administered by local boards and Municipalities. The Director of Public Instruction has accordingly been requested to give notice at once in respect of all educational institutions which are conducted or controlled by members of nations with whom hostilities are in progress that all grants to them, either from Government funds or from public funds administered by local bodies, will cease with effect from the 30th September, 1915. Any actual specific promise of assistance should, however, be fulfilled and regard should be had to the interests of individuals, particularly young children, who have hitherto been dependent on these missions.

2. The Director of Public Instruction has been requested to ascertain and report what educational institutions will be closed in consequence of this order and what will be the results of such closure upon individual teachers and others; to consult Collectors and also, if necessary, the Missionary Educational Council of South India as to the future manage-

ment of such institutions ; and to submit proposals on the subject to the Government. Similar instructions have been given to the Surgeon-General in respect of medical institutions which will be affected by these orders. [G.O. No. 1096 L., dated 7-8-15.]

Travelling Allowances.

The Government hereby direct that in future un-official Presidents of Taluk Boards and Chairmen of Municipal Councils shall be treated as first-class officers under the Civil Service Regulations for the purposes of deciding their claims to travelling allowance for journeys made in the course of their official duties. Un-official Chairmen-delegate and Vice-Chairmen of Municipal Councils and Vice-Presidents of Taluk Boards will, in the same circumstances, be treated as second-class officers under the Civil Service Regulations, their daily allowance being fixed at Rs. 3.

2. The Accountant-General will be requested to make the following corrections in the Local Fund Code and the Municipal Account Code :—

(1) Substitute the following for note 1 to article 227 of the Local Fund Code, approved in G. O. 258 L., dated the 9th February 1914 :—

“ Un-official elected and nominated Presidents of Taluk Boards will be paid travelling allowance at the rates admissible to first-class officers under the Civil Service Regulations for journeys made in the course of their official duties.”

(2) Insert the following as article 31-A of the Municipal Account Code :—

“ Un-official Chairmen of Municipal Councils will be paid travelling allowance at the rates admissible to first-class officers under the Civil Service Regulations for journeys made in the course of their official duties, but un-official Chairmen-delegates and Vice-chairmen will in the same circumstances be treated as second-class officers under the Civil Service Regulations, their daily allowance being fixed at Rs. 3.—[G. O. No. 1132 L., dated 13-8-15.]

[Bengal.]

Health Officers for Municipalities.

The Governor in Council is pleased, in exercise of the power conferred by sub-section (1) of section 349D of the Bengal Municipal Act, 1884, (as amended by Bengal Act II of 1914) to fix the class of Health Officers and the number of Sanitary Inspectors to be appointed for each of the Municipalities as shown against each of them in the annexed list. [G.O. No. 803 San. dated 18-9-15.]

DIVISION.	District.	Name of Municipality.	Number and class of Health Officer.	Number and class of Sanitary Inspector.
Burdwan	Burdwan..	Burdwan ..	1 second class.	2 second class.
		Katwa ..	Nil ..	1 do.
		Kalna ..	Nil ..	1 do.
		Raniganj ..	Nil ..	1 do.
	Birbhum ..	Suri ..	Nil ..	1 do.
	Bankura ..	Bankura ..	Nil ..	1 do.
		Vishnupur ..	Nil ..	1 do.
	Midnapore.	Midnapore ..	1 second class.	2 do.
		Tamluk ..	Nil ..	1 do.
	Hooghly ..	Hooghly-Chinsura	1 second class.	2 do.
		Utterpara ..	Nil ..	1 do.
		Baidyabati ..	Nil ..	1 do.
		Bhadreswar. ..	Nil ..	2 do.
	Howrah ..	Howrah ..	1 first class ..	4 do.
		Bally ..	Nil ..	1 do.

[United Provinces.]

The Burma meat trade in the United Provinces.

On the 31st March, 1915, a resolution was moved in the Provincial Legislative Council by the Hon'ble Lala Sukhbir Singh, recommending that the Local Government should put a stop to the increasing operations of the Burma meat trade in these provinces, on the ground that the supply of cattle for agricultural and dairying purposes in India was being seriously affected. The ensuing debate showed that the alleged economic effects of the existence of this trade were not satisfactorily established, but that further careful investi-

gation was advisable for the purpose both of ascertaining the economic basis and results of the industry and of setting out the conditions under which it is carried on.

The Hon'ble Member accordingly withdrew his resolution on the understanding that while not prepared to put a stop to the trade Government was ready to undertake the legislation required to provide such measure of regulation and control as the proposed enquiry might show to be necessary. It was agreed that, pending the introduction of this legislation, the Local Government should arrange for a careful survey of the trade and a census of the cattle brought to the principal slaughter-houses; should order an investigation as to whether the trade was unsafe either to the consumers of the dried meat; to the people engaged in the industry or to the population in whose neighbourhood the operations of slaughtering and jerking were carried on; and should ascertain what abuses existed and were susceptible of removal, and what further restrictions it was necessary to impose in the interests alike of humanity and sanitation.

2. In pursuance of this decision a Bill to enable the Local Government to regulate certain offensive trades, and to give district boards powers to enforce rules made by Government for this purpose and to levy fees, was presented by the Local Government to the Legislative Council and became law in March last. In the meantime the enquiry promised by Government was carried out at certain selected places through the agency of the Provincial Veterinary department. The results of this enquiry are embodied in the report* published with this resolution. The year was of course hardly a typical one for the trade, and it will be necessary to wait—for a long time, be it hoped—in order to gauge its real conditions in a famine year. At the same time the information now obtained affords a useful basis for future action and indicates the worst flaws in the present system as well as the most useful lines of reform.

* Not reprinted.

3. There are three aspects of the trade which concern the public—the economic, the humanitarian, and the sanitary. So far as the present enquiry goes, the economic evils of the trade seem to have been over-estimated. The vast majority of the cattle which are slaughtered are valueless for agricultural or dairying purposes and a commercial use is made of animals which would otherwise be an incubus on the land until they died in misery. Whether the position is different in a year of famine will be watched when the time comes, but meanwhile it is abundantly clear that there are no grounds for interfering with the trade on the plea that it checks rural efficiency or reacts unfavourably upon the milk-supply. In so far as it carries off milch-kine which are temporarily dry, the trade is of course a misfortune, but the remedy for this is to provide accommodation for such cattle in grazing farms—a point on which the Agricultural department has been already asked to undertake experiments. The employment of the trade slaughter-houses for the disposal of stolen cattle is also a feature of importance, but it can be partly met by a system of registration and the attention of the Inspector-General of Police will be drawn to the matter.

From a humanitarian point of view also the conditions of the trade are not so bad as has been feared. Certain measures of improvement are nevertheless called for, and the matter is one on which regulation is commended to the local authorities who are now obtaining control. In this connection Government will be pleased to place at their disposal, to such extent as they may desire, the advice of the Civil Veterinary department.

4. The sanitary aspect of the trade has two sides, its effect on the consumers of the jerked meat, and its effect on the health of the neighbourhood in which the slaughter-houses are located. The former question will be referred to the Government of Burma, as it is in that province that the bulk of the meat appears to be consumed, while the latter is one for

regulation by the district and municipal boards concerned. In most of the slaughter-houses arrangements of a sanitary nature are conspicuous by their absence, and the disgusting conditions which prevail constitute a real danger to the public health. A full note upon these points has been drawn up by the Superintendent of the Civil Veterinary department and will be communicated by Government to the boards concerned; the latter will then be asked to draw up, in consultation with the Superintendent, rules for the future control of the trade. These rules will require the approval of Government, along with the complementary proposals for an efficient system of registration. Licences bearing fees commensurate with the very moderate profits of the trade will of course be essential, and it is also possible that the boards may have to make advances for the erection of sanitary premises.

5. The Lieutenant-Governor is confident that action on the lines now indicated will go far to ameliorate the conditions of a trade which, in spite of various unpleasant features, is clearly not an industry which there is any justification for prohibiting.

[Bombay.]

The Government of India having urged the desirability of an enquiry throughout India into the possibility of improving the sanitary arrangements at pilgrim centres, the Governor in Council is pleased to appoint a Committee to conduct the enquiry in the Bombay Presidency and Sind.

The scope of the enquiry will include all matters relating to sanitation with special reference to camping grounds, lodging houses, sanitary arrangements on railways, and the prevention of disease.

The Governor in Council invites gentlemen having special experience of the working of the arrangements in connection with the pilgrim centres and of the conditions in which the pilgrimages to them are performed to assist the Committee either by giving oral evidence or by communicating notes and suggestions. All enquiries and communications should be addressed to the Sanitary Commissioner for the Government of Bombay at Poona.

Legislative Intelligence.

[Imperial Legislative Council.]

THE HON'BLE MAHARAJA RANJIT SINHA asked :—

(a) Will the Government be pleased to furnish a statement showing the amount spent in each Province by the District Boards for the purpose of sanitation out of the assignment of Public Works Cesses ?

(b) Will the Government be pleased to state if they have issued any instructions how the grants of Public Works Cesses to the District Boards will be utilized in the several Provinces ?

(c) Do the Government propose to issue any instructions to Local Governments and Administrations to earmark a certain proportion of the said grant for the purpose of sanitation ?

THE HON'BLE SIR HARCOURT BUTLER replied :—

(a). A statement* is laid on the table furnishing the required information so far as it is available.

** Statement showing the amount spent by the District Boards
in certain Provinces on sanitation during
1913-1914 and 1914-1915.*

Province.	AMOUNT SPENT DURING		Remarks.
	1913-1914.	1914-1915.	
	Rs.	Rs.	
Bengal	4,78,373	7,66,466	The Public Works cess, which was surrendered, has been merged in the District fund, and hence it is not possible to say definitely how much was spent on sanitation out of that cess.
Bihar and Orissa	1,95,363	2,94,043	Exact figures showing the amount spent on sanitation out of the enhanced resources are not available.

Province.	AMOUNT SPENT DURING		Remarks.
	1913-1914.	1914-1915.	
United Provinces	1,02,500	1,19,000	The amount for Rs. 63,600 in ... figures do not include any expenditure on public works undertaken with sanitary purpose. The contracts with the District Boards provide for a recurring expenditure of Rs. 2,63,600 on sanitation, which will be gradually worked up to.
Punjab	7,303	13,529	These figures are approximate. Exact figures are ...
North-West Frontier Province.	3,769	2,301	Two Districts incurred no expenditure on sanitation, while in a third, portion of the savings was utilized on communications, and educational and medical requirements.

(b) and (c). In March 1913, the Government of India addressed the Local Governments concerned, as follows, with reference to the assignments made in favour of District Boards :—

‘The Government of India leave it to Local Governments to determine, if necessary, to what specific purposes this increased income should be devoted, but they trust that a substantial portion of this sum will be set apart for the improvement of the rural water-supply, for anti-malarial measures, for the protection of grain stores and markets in plague-infected localities, and generally for the sanitation of villages and small towns.’

The Hon'ble Member's attention is also invited to paragraph 3 of the Resolution of the Government of India No. 888-909, dated 13th May, 1914, on Indian Sanitary Policy.

The Government of India do not propose to issue any further instructions on the subject.

[Punjab.]

THE HON'BLE RAI BAHADUR RAM SARAN DAS asked whether it was proposed to open a separate jail for prisoners suffering from tuberculosis and, if so, when it would be opened.

GOVERNMENT replied: The establishment of a tubercular jail will soon be an accomplished fact, as the old jail at Shahpur which would otherwise have been abandoned in consequence of the transfer of the head-quarters of the district to Shahpur is to be utilised for the purpose. The arrangement is however only a temporary one. It is proposed to locate the permanent tubercular jail at Jullundur, but the final decision has been postponed owing to difficulties regarding water supply.

THE HON'BLE RAI BAHADUR RAM SARAN DAS asked whether Government contemplated to enact legislation on the lines of the Bengal Sanitary Drainage Act for the districts of the Punjab where malaria was rampant.

GOVERNMENT replied: The answer is in the negative. The conditions which required the passing of the Bengal Sanitary Drainage Act of 1895, in order to legalise the levy of a special rate or cess to defray the cost of drainage works, do not obtain in the Punjab. Under section 20 (j) of the Punjab District Boards Act of 1883, the Local Government may at any time place the drainage and reclamation of swamps under the control of a district board, and under section 37 (2) expenditure on such works may be met from the district fund. If a special rate or tax is required, it can be levied under sections 30 and 31 of the District Boards Act.

THE HON'BLE RAI BAHADUR HARI CHAND asked: Will the Government be pleased to state when it is going to give effect to the principles enunciated in the recent resolution of the Government of India on Local Self-Government?

GOVERNMENT replied: The Resolution in question is at present under the consideration of Government. It is believed that most of the principles enunciated in it have already been given effect to, as far as they are suited to the

special conditions of the Punjab. In this connection the Hon'ble Member may be reminded that the Resolution had its genesis in the Report of the Royal Commission upon Decentralisation issued early in 1909. Much ground has been covered in regard to Local Self-Government since that date. For instance, in this Council we have after very full and complete deliberations passed a new Municipal Act in Punjab Act III of 1911. Our District Boards Act XX of 1883 is an older enactment, but its provisions were from the first wide and comprehensive, and as modified and brought up-to-date from time to time, it has, Government believes, stood the test of practical application to the rural conditions of our districts remarkably well. But if the examination of the Resolution reveals any defects or omissions, the question of making them good will be taken up. If the Hon'ble Member will indicate any particular principle laid down in the Government of India Resolution to which he considers effect is not at present being given in this Province, Government will be glad to examine the matter.

Recent Publications.

MATERNITY.—Letters from working women, collected by the Women's Co-operative Guild. With a preface by the Right Hon. Herbert Samuel M. P. Bell. Price 2s. 6d. net.

[The object of this book is that for which the Women's Co-operative Guild is working—the effective care of maternity and infancy.]

THE WATERWORKS DIRECTORY AND STATISTICS, 1915.
Hagall, Wilson and Viney. Price 10s. 6d.

WATER PURIFICATION PLANTS AND THEIR OPERATION.—
By Milton F. Stein, Assoc. Mem. Am. Soc. C. E., Assistant Engineer, Cleveland Filtration Plant. John Wiley & Sons, New York. Price \$ 2'64.

STRUCTURAL DESIGN.—Vol. II. Design of Simple Structures. By H. R. Thayer, Constable. Price 6s.

TOWN PLANNING IN AUSTRALIA.—By George A. Taylor, Editor of *Building and Real Estate Magazine*.

CIVIC RIGHTEOUSNESS AND CIVIC PRIDE. By Newton Marshall Hall. Price \$ 1.35.

INDUSTRIAL PNEUMONOCOONIOSIS.—With special reference to Dust-Phtysis. By E. C. Collis, H. M. Medical Inspector of Factories (Milroy Lectures). Public Health Office.

Notes of Cases.

(Important Cases will be fully reported hereafter.)

HIGH COURT, MADRAS.

AYLING AND SESHAGIRI IYER, JJ.

SEPTEMBER 22, 1915.

Madras District Municipalities Act, (IV of 1884) Section 250 and Rules framed thereunder—Election—Refusal of Chairman to register the name of one V. as entitled to vote on behalf of firm already registered—Variation of voters' list—Damages for improper refusal, suit for—Malice if necessary.

The registration of the name of a person as one entitled to vote on behalf of firm is not a variation of the voters' list and such an entry can be made even during the election.

A Municipal Chairman is bound to enquire into a petition which has been presented to him for the registry of the name of a person as one entitled to vote on behalf of a firm and a summary rejection thereof is illegal and inconsistent with *bona fides* on his part.

A Municipal Chairman is liable in damages for refusing to register the name of a person as entitled to vote on behalf of a firm as long as the refusal is not *bona fide*, even though no express malice is made out. [S. A. No. 731 of 1913.]

HIGH COURT, BOMBAY.

Bombay District Municipal Act, Sec. 42—Liability of Municipal Councillors for sums embezzled by Municipal servants—Embezzlement—Misapplication.

Councillors are in the position of trustees and it is their duty to see that the Municipal Funds are not misapplied. They would be liable for any loss of the trust fund which was facilitated by the gross neglect of their duties as trustees and their liability would be the same whether the loss was caused by an act free from moral turpitude or by a crime.

Practical Points.

[The questions of subscribers only are answerable in the Gazette. The name and address of the subscriber must accompany each communication which must be legibly written.]

13. A house is vacant and is in charge of a caretaker. A local authority proposes to cut off the water supply to the house on the ground that water is used by the caretaker. Is its action legal?

Ans. Water required by a caretaker in charge of the house is water required for a domestic purpose [See *Smith v. Muller*, (1894) 1 Q. B. 192.]; and so long as the caretaker lives on the premises, the Corporation is bound to supply water for all his household purposes. If the water supply is cut off, its action is illegal.

14. The owner of a printing press factory wishes to have the buildings assessed as an ordinary house used for human habitation; but the local authority claims to assess the premises on the footing of a press factory. Is its contention right?

Ans. Property must be valued as it stands. In *Secretary of State v. Madras Municipality*, I. L. R. 10 Mad. 38, the Municipality claimed to assess an hospital premises as a building used for hospital purposes and its contention was upheld by the Court. The contention of the local authority to assess the premises on the footing of a building used for a printing press is right. [See the whole matter discussed in the Law of Municipal Corporations in British India, Vol. III, pp. 172-4.]



The Local

Self-Government Gazette.

Vol. I, No. 11.]

NOVEMBER

[1915

The late Sir Pherozeshah Mehta.

AMONG the many striking tributes which the country is paying to the memory of the great departed patriot and statesman, Sir Pherozeshah Merwanjee Mehta, K.C.I.E., there would be none which could be more apt than those which, we trust, all local self-governing bodies in India will be rendering to one whose example as a citizen and civic father has stood unique in the whole of India. We propose not to travel over the broad pages of India's political history, in the making of which he took such a conspicuous part, nor to estimate here the value of his great national services. But his work in the cause of civic freedom and progress has by itself given him a title to glory, which few among our leading countrymen could hope to achieve. Mr. Pherozeshah Mehta was barely 25 years old when he first took part in the burning controversies which led, in Bombay, to the larger scheme of city municipal reform, finally embodied there in the Municipal Act of 1872. In the very midst of the crisis which Mr. Arthur Crawford's municipal extravagance had precipitated in Bombay, Mr. Mehta had prepared and read papers on municipal reform and delivered speeches denouncing the ascendancy of the bureaucracy on the one hand, and on the other, insisting upon the establishment of an Elected Council whose function was not to govern directly, but to administer through an Executive Officer. Mr. Mehta thus faced some obloquy on both sides,

but the principle for which he fought, namely, that of an Elected Corporation, a Standing Committee and an Executive Commissioner, became established in the Municipal Government of Bombay, and has now become the standard design for the other Presidency Municipalities in India. Mr. Mehta became a member of the new Corporation in 1872, as soon as it was constituted, and after a few years of training and strenuous work, became its virtual dictator and continued to be so till the last day of his life. He was elected Chairman of the Corporation in 1884 and was again re-elected next year—which was at the time a most unusual honour. After the Bombay Presidency Corporation was reconstituted, Sir Pherozeshah Mehta, as he thereafter became, was re-elected President in 1905, and was subsequently re-elected, despite the most vehement opposition of the entire bureaucratic phalanx and under circumstances which will be within the recollection of most Indians.

It is unnecessary to indicate to our readers the extent to which he was responsible in making the Bombay Corporation the premier municipal unit of India; but apart from his work for the great City of his birth, his interest in and work for Local Self-Government in general was very great. When the benevolent viceroyalty of Lord Ripon resulted in the issue of the famous Local Self-Government Resolution, he and Telang did yeoman service in the Bombay Legislative Council to thwart the attempts of the official class to neutralise the liberal principles embodied in the Resolution by means of the Draft Bill which eventually became the Municipal Act, I of 1888. Amidst the chorus of national farewells with which Lord Ripon departed from India in 1885, those of Mr. Pherozeshah Mehta were of course conspicuous, but no passage in the speeches which he had the privilege to deliver at Bombay during that time, is more worth remembering than the following :—

“ And, gentlemen, it seems to me that we can approach the throne of Her Majesty with peculiar propriety for the favour we ask.

For Lord Ripon fulfils in him that fervant prophecy which the Poet Laureate had addressed to Her Majesty in his touching dedication of his poems :

“ And statesmen at her Council met
 “ Who knew the seasons, when to take
 “ Occasion by the hand and make
 “ The bounds of freedom wider yet,
 “ By shaping some august decree
 “ Which left her throne unshaken still
 “ Broad-based upon her people's will ”

(cheers). Such a Statesman has Her Majesty in Lord Ripon and such an august decree is his scheme of Local Self-Government ” (renewed cheers).

It is superfluous to add that in respect of his mother country, Sir Pherozeshah fulfilled in an even ampler measure, the duties of high statesmanship which the late Poet Laureate wished for the great Queen Victoria.

Village Panchayats in Madras.

[BY THE HON'BLE RAO BAHADUR M. RAMACHANDRA RAO.]

THE orders of the Madras Government on the constitution of village Panchayats have long been overdue and have now been published (*vide* p. 1061.) The constitution of village Panchayats is one of those administrative reforms which has been urged for a very long time and the orders now issued have been naturally received with a great deal of disappointment. The reconstruction of village life on lines suitable to modern conditions and in consonance with the established traditions of the people has always been one of the points on which a great difference of opinion has existed between the officials and non-officials. The disintegration of the old village autonomy and the growth and assertion of individual rights have resulted in the infusion of democratic spirit in an atmosphere quite foreign to it. The patriarchal rule of the village elders is not now possible ; and the average villager is now much more critical and is prone to challenge the authority of those of whose superiority to himself he is not convinced.

One of the vital points on which there has been considerable divergence of opinion is as to whether the Panchayat should be a complete unit in itself for the exercise of administrative and judicial functions or whether it should be of the functional type, *i.e.*, whether Panchayats should be so constituted as to restrict them only to one function at a time. The exponents of the latter view have urged that it would be impolitic to burden the Panchayats with all the varied activities of the village administration of the present day and that for the disposal of civil and criminal litigation of the village, for the settlement of irrigation and other disputes, for the management of the village schools and village sanitation, for looking after the fuel and fodder reserves and for all these and other problems of rural administration, a single Panchayat would be unsuitable and that in most cases the duties might even prove to be too heavy. It is also pointed out that if the machinery of the Panchayat does not work smoothly in regard to a particular branch of village activity, it would also affect the other branches of work under the control of a Panchayat and that this danger might be minimised by the constitution of functional Panchayats.

It must be stated on the other hand that in several villages it will not be possible to find men to run different Panchayats for different purposes and that in the smaller villages specially, it will be desirable to have a Panchayat to attend to all the requirements of the people. In the order now issued, the Madras Government have not faced this question in the proper spirit and the conclusions come to are much to be regretted. So far as can be judged from the published orders the main reason appears to be that the Government are unwilling to take a new line in this matter and are anxious to proceed on existing foundations—even to the extent of perpetuating and strengthening the glaring evils of the present system. Added to this, there is also the fact that the Local Government are extremely nervous about undertaking new legislation in this matter. Otherwise, it is impossible to

understand why they should ignore the general principles laid down by the Government of India indicating the lines on which advance is most likely to be successful. The Imperial Government have stated that powers and duties of the Panchayat need not and should not be identical in every village and when it is considered desirable to confer judicial and administrative functions upon Panchayats the same body should exercise both functions. It would have been, therefore, wise for the Government to have undertaken the necessary legislation of a permissive and general character for the constitution of the village Panchayats instead of falling back on old regulations and Acts to answer the needs of the present day. A comprehensive legislative measure of that kind defining the various functions of the village Panchayats with ample rule-making powers would have answered the purpose very much better and also would have met the cherished desire of the people for a revival of autonomous village institutions. It would also have enabled the Government to constitute either a general or functional Panchayat suitable to each locality. One important consideration which has influenced the views of Government is the present position of the village headmen. The Government are anxious to develop the whole system of the Panchayat with the village headman as the chief executive officer. It has been pressed on the Government for a long time that the village headman has lost all his ancient glory, that he has no influence whatever in most of the villages and that he is now regarded merely a paid servant of the Government. The social life of the village has been so changed under the existing conditions that in most villages there are many men more wealthy, more influential and better informed and educated than the village headman. The attempt therefore to maintain the position of the village headmen, is doomed to failure for social and economic reasons and the exhortations such as those contained in the last paragraph of the Government Order to district officers to maintain the dignity of the village headmen will lead to nothing. I do not believe that

even the petty Government officials will be reformed by the admonitions of the Government so long as the village officer is the henchman of every subordinate of every department of the Government.

It is admitted that the evidence collected on this point shows that in several districts the village headmen on whom must largely depend the success of any system of village Panchayats, does not always command the confidence of the villagers. The main cause of the existing state of things is admitted to be the present law which prescribes a rigid adherence to the principle of primogeniture and it is stated that the question of amending the law is under consideration. It is unnecessary at present to examine the soundness of the proposal to abolish the existing method of recruitment of village officers but assuming that another man is considered by the local officer to be more capable for the purposes of being the agent of the Government in the village for collection of revenue, why he should necessarily be equally fit to discharge the functions of the chairman of the Panchayat is not quite clear. We do not know the exact proposals of the Government in regard to the extended judicial powers both in regard to civil and criminal matters proposed to be conferred on the Panchayats under the new proposals which are stated to be under consideration. But assuming that they are anything substantially in advance of the existing conditions, the machinery of the administration to be set up must be such as to enable the most competent men in the village to work the Panchayats if they are to command the confidence of the villagers. One of the matters on which insistence has been laid for some time is that wherever the conditions are suitable the local Government should take power to assign the jurisdiction over petty civil and criminal matters exclusively to the village Panchayats and to withdraw the jurisdiction of the existing civil and criminal courts in those matters. For example, in regard to civil suits, Panchayats in some of the advanced districts might be entrusted exclusively

with the trial of suits below Rs. 20, while in the more backward localities the Panchayats and the Courts might continue to have concurrent jurisdiction as at present, leaving it to the option of the suitor to choose the forum. Under these circumstances it is a matter for regret that the Government should have proceeded on the assumption that the present methods providing for the trial of petty disputes in the villages are satisfactory and need no radical change. A fuller pronouncement setting forth the exact direction in which action is proposed to be taken in regard to one of the most essential functions of the village Panchayats, was certainly called for.

The conclusions reached in regard to the other functions of the Panchayat are also unsatisfactory. The Government have come to the decision that the direction in which action might be taken is by the development of Union Panchayats under the Madras Local Boards Act and also by the constitution of an informal kind of Panchayat "on a voluntary basis and without legislative sanction." One of the great complaints that has been urged against the existing Union Panchayats is that the funds that can be raised by them are swallowed up by the establishments and that there is nothing left for any effective improvement of the villages. The financial aspect of the question is therefore the most vital part of any scheme of village improvement and it is very much to be regretted that the proposals of the Government on this subject are so meagre and half-hearted. In fact, I have grave apprehensions that the whole scheme of the Government for the constitution of the Panchayats as now laid down is likely to be infructuous on this ground. The Royal Commission on Decentralisation have recognised that it was essential to the popularity and efficiency of the Panchayat system that it should not be associated with any new form of local taxation. The ground was that the imposition of taxation of this character has made such bodies as the existing Unions and Sanitary Committees unpopular. The Commission recommended that the revenues of the Panchayats should consist of an assignment of a

portion of the land cess, special grants for particular objects of local improvement to be made by Collectors, receipts of village cattle funds or markets and small fees on Civil suits to be filed before them. In fact, the whole scheme of the Royal Commission for financing the Panchayats in rural areas was conceived on the basis that the funds should be provided to the Panchayats from outside from the sources above indicated, and that the experiment should not be jeopardized by any rigid system of local taxation being enforced in the villages. The Government of Madras take the opposite view. Their main method for financing the scheme of village Panchayats is to constitute the villages of a certain size as Union Panchayats under the Local Boards Act and thus to empower the Panchayats to levy house tax in the villages. On the question of financial assistance from outside they express the opinion that "it will probably be found desirable in the case of the smaller unions to give a subvention from the Taluk Board funds to the extent of say, twenty five per cent. of the funds raised by the house tax" and they also state that the Government will be prepared to consider the question of making a subvention to the District Boards where "the need for financial assistance is likely to impose on any particular District, a burden greater than the funds of that body can bear."

It will be seen therefore that the Government do not hold out any definite assurance of any financial assistance to the Panchayats or to the District Boards who are to finance them. The subventions from the Local Board funds will also depend on the good will of the members of the Taluk Board for the time being. If the well-being of the villages is to be secured and a substantial advance made, what is urgently required is a statutory appropriation making it impossible to starve the Panchayats for want of funds. I would suggest that a statutory guarantee must be given to the effect that for every rupee raised in the village an equal amount will be contributed from the Provincial funds and a similar contribution will be made from the local funds. This will be a sufficient incentive

for raising money for local improvements. As it is, the Government merely directs the constitution of Union Panchayats without any definite assurance that funds would be forthcoming to finance them except what they are able to raise themselves under the provisions of the Act. Under these circumstances, I shall not be surprised that when the Collectors go round to ascertain the wishes of the villagers they are told by the inhabitants that they do not favour the formation of their villages into Union Panchayats. "It is hopeless to expect useful and efficient work from honorary agencies so long as they are merely called upon to perform duties which are often unattractive and must frequently bring them into opposition to their fellow villagers and are given no real power and responsibility. It is chiefly in the exercise of the judicial functions and in the power to raise and spend money on local improvements that local authorities acquire importance." These are the observations of the Bengal District Administration Committee in connection with village organisation. Any proposals therefore which will not ensure to the Panchayats definite financial resources are bound to fail to fulfil their purpose. The best course, therefore, would have been to settle by statutory guarantee the finance of the village authorities so as to place them on a stable foundation and not merely to leave it to the varying moods of the Presidents of the District Boards or of the Government for the time being. Some attempt has been made in this direction in chapter V, relating to the finance of village authorities, in the Assam Local Self-Government Act of 1915. The Bengal District Administration Committee have also advocated a definite distribution of two-thirds of the Public Works cess amongst the Union Panchayats in that Province, to form the nucleus of a fund to be *supplemented* by local contributions. A statutory appropriation is also to be found in Ceylon in the Small Towns Act in force in that Province. I do not believe therefore that unless the Government are prepared to formulate a proper scheme for financing the Panchayats, any advance can be made merely

by the constitution of a number of Union Panchayats under the Local Boards Act.

Another matter which requires considerable attention before the orders of the Government can be carried out is the simplification of accounts relating to the Union Panchayats. The Local Fund Code prescribes the maintenance by Union Panchayats of a very large number of accounts inter-related to each other and they are modelled to a great extent on the accounts maintained by Local Boards and Municipalities. It will be impossible for the local "school master, post master or karnam" to maintain these accounts and to do the extraordinary amount of clerical work that is now involved. It is not therefore easy to take advantage of the option about the entertainment of a separate office establishment. In fact the whole procedure will have to be so simplified and so radically altered that it is surprising that the Government without first examining the possibilities of the case should have proceeded to state "that it is not essential for Union Panchayats to entertain a separate office establishment". The time has come when the whole Local Fund Code will have to be recast so as to free both the Union Panchayats and Taluk Boards from the extreme position of dependence on the District Boards. The financial and sanctioning powers will have to be revised and a greater amount of freedom in every sphere of activity will have to be conferred on these bodies. I have great doubts as regards the success of the informal Panchayat to be constituted on a voluntary basis. I am unable to understand the attitude of the Government in the matter of conferring statutory powers wherever it is necessary to do so. How is the voluntary Panchayat to enforce its order? One is reminded of the theory of the social compact. But is it possible to enforce any sanitary regulations without any statutory power at the back whether it is actually exercised or not? During my recent tour in connection with the Pilgrim Committee, I have met some specimens of Honorary Supervisors of Sanitation appointed by Taluk Boards in villages where some organisation is

urgently necessary. These gentlemen are able to do nothing and I have no doubt that if the decision of a voluntary Panchayat is challenged by some obstructive villager the Panchayat will be soon brought into contempt.

Finally there is a question of organisation of the Panchayats. The Government apparently wish to leave it to the Collectors and Presidents of Taluk Boards to take all the preliminary steps for the constitution of the Panchayats. The Royal Commission on Decentralisation recommended a special assistant to the Collector for organising and supervising the work of these Panchayats. It is impossible at present to form an estimate of the number of villages which will have to be constituted as Unions. The work to some extent will have to be of the propagandistic type and will have to be done with considerable sympathy and tact. In Bengal the whole question has been very thoroughly examined and the Bengal District Administration Committee are convinced of the soundness of the circle system proposed by the Government of Eastern Bengal and Assam and expressed the opinion that they saw no better way of introducing a real system of village administration and of making the members of Panchayats useful alike to their fellow-subjects and to the Government, and advocated its introduction into the districts of that Province. The circle officers are Sub-Deputy Collectors entrusted with the organisation and working of Union Panchayats and have established a considerable amount of sympathy between themselves and the Panchayats for the development of their work. The system is fully described in the recent report of Bengal District Administration Committee. In some of the heavier districts of this Presidency where the Panchayats are likely to be numerous, some work of organisation and guidance will be necessary and, I fully believe, will be fruitful of very good results.



Public Water Supplies.

[By J. W. MADELEY, M.A., M. INST. C.E., M. AM. SOC. C. E.,
SPECIAL ENGINEER, CORPORATION OF MADRAS.]

(Concluded from the last issue.)

11. The water which is delivered to the City, Town or Village has to be distributed to the individual consumers. Cast iron pipes laid through the streets or roads are almost universally employed for this purpose. From these pipes are taken the smaller house service and fountain service pipes, usually made of lead or galvanized iron.

The following are the essential requirements of a good distribution system :—

(1) The supply of all consumers with an adequate quantity of water continuously throughout the day.

(2) The maintenance of a sufficient pressure throughout the distribution system.

(3) Perfect and rapid circulation of water throughout the entire system.

(4) Reasonable protection against fire.

(5) Means of detecting and stopping waste in a systematic manner.

The first step in planning the distribution system is to ascertain as precisely as possible, the population to be supplied in the different districts of the area. In considering this question, it is important to decide what future increase in population should be provided for, or in other words to what extent the capacity of the pipes should be enlarged in order to meet future increased demands without laying an undue burden of cost upon the present tax-payers. It may be anticipated that such loans as are required to defray the cost of waterworks will be subject to repayment over a period of from 30 to 50 years

according to the nature of the works. Therefore the distributory system should be sufficient for the needs of the consumers at the expiration of that period.

The probable increase of population has to be determined not only for the community as a whole but for each division and sub-division which is supplied by a separate pipe. It would be absurd to provide for the same percentage increase in the densely built up centre of a town as in a sparsely populated suburb. If this were done, wasteful expenditure would be incurred in providing the built-up area with unnecessarily large pipes, whereas in a few years time, the pipes provided for the sparsely-populated suburb would be too small. In the case of Madras City, I allowed for an increase of but 1.60% per decade for densely-populated Georgetown, and as much as 22.10 for the suburb of Perambur.

12. The quantity to be supplied per head must be sufficient for the reasonable requirements of the community. These requirements will depend on the nature of the community and in a hot climate like that of South India every precaution has to be taken to prevent waste.

The Madras Government has stated that water connections should be metered. The cost of the meter and its maintenance to be paid by the owner; those of the community who are not in a position to bear the cost of the connections, the meter and the upkeep of these works, to be supplied from public taps. With this type of service, the consumption for the inhabitants using public taps, is found to be about 6 gallons per head per day, and those using metered service about 10 gallons per head per day, whereas with unmetered services, the consumption is likely to amount to anything from 20 to 40 gallons per head per day if the water is available. The latter figure shows how great is the waste of water, when no restrictions are imposed. The meter system is undoubtedly the best as it makes the owner pay for what he

takes, and the monthly bill, which depends on the consumption, acts as an automatic check on waste, for the man who pays the bill will take precautions to prevent the amount being unreasonably great.

13. The figures just given refer to the average daily rate of supply throughout the year. At certain times, however, especially during the hot dry weather, the average will be exceeded so that on some days the consumption will be considerably greater than the average. Further the rate of supply throughout the day is not constant, but is greatest in the morning. From experiments made in Madras, I came to the conclusion that the pipes for the distribution scheme of this City should be designed to carry three times the average dry weather flow.

14. The Water Works in the mofussil towns in the Madras Presidency are designed to maintain a pressure of 10 feet. This is very low compared with the usual practice in Europe and America, and in the large cities of India where the conditions begin to approximate those of western cities, the pressure is usually about 50 feet. In Bombay, the lowest pressure in any district is 50 feet and in many districts it is between 100 and 150 feet. Calcutta has recently completed a scheme costing some 30 lakhs of rupees to ensure a pressure of at least 40 feet at all times and in every part of the city, and the New Madras Water Works have been designed to provide a pressure of about 50 feet above ground level at the ends of the principal water mains, though up to the present it has been unable to apply the full pressure owing to the defective state of many of the old pipes.

15. The smallest size of pipe which should be used in a Distribution System is 3 inch. Smaller pipes than these are found to get choked up rapidly. In Madras City where the water has considerable

action on the iron of pipes, I have fixed 4 inch. as the minimum diameter for all new pipes.

16. For perfect fire protection, no pipe should be less than 6-inch. in diameter, but the expense involved by adopting this size of pipe in India would be very great and would not be justified, in this country, where fires are fortunately of rare occurrence. Everything should be done however to ensure that the best use is made of the Distribution System. For this reason, the system should be laid on the net-work principle, so that the distributory pipes are supplied from both ends. The carrying capacity will thus be doubled as compared with pipes fed from one end only.

17. In the built-up areas of a town Fire Hydrants should be placed at every street intersection, and should these be more than 300 ft. apart, intermediate hydrants should be inserted. Where there are important public buildings, it is well to have the street mains at least 6-inch in diameter.

18. It has already been stated that the ideal method of water-supply in the East is through metered house services, so that the consumer has to pay for all the water which passes through the meter, whether it is actually used or wasted. Owing to following western traditions, however, most of the large cities of India have given connections to low rented houses, where the cost of installing a meter and its maintenance would be out of proportion to the value of the house. The consequence is that in these towns the consumption per head is very high. For instance, in Bombay it is 40 gallons per head per day, while in Calcutta, the consumption of filtered water is about 30 gallons per head per day, and of unfiltered water about 20 gallons per head per day. In Madras, the consumption before the New Water Works was opened was about 18 gallons per head per day. This has jumped to 38 gallons per head per day,

a quantity which must be reduced, or still further costly works will have to be carried out.

In an endeavour to reduce water in Madras City, two types of house connections have been adopted. Two types of house connections adopted in Madras City. A first-class service in which the house holder has a supply which is not liable to inspection without notice. In this case, the supply is metered at the house-owner's cost, and the householder is charged for all water used above a free allowance equal to 160 gallons per month of every rupee of monthly rent, and a second-class service, in which only one tap is allowed, and this must be placed in such a position that they can at all times be readily inspected by the Municipal staff, that is to say, usually in front of the house, on the pial or verandah.

19. The metering of every house service, though of the greatest value, does not take cognisance of the waste that occurs from street mains, and, from the house connections up to the meter. In the case of many supplies, especially those that have been in existence for many years, there will probably be a considerable leakage in this portion of the system. To discover and remove these sources of waste, a waste water meter system is of the highest possible value, and is becoming almost universal in the large towns of England, while in India, Bombay and Calcutta are using the system very extensively and it has been recommended for Madras and Rangoon.

In a waste water meter system, the City is sub-divided into districts, and the pipes are so arranged that by closing a few valves, the whole water required by any district is passed through a pipe on which is placed a waste water meter. This form of meter records continuously the flow of water on a diagram attached to a drum, which is caused to rotate by a clock. The flow which takes place between midnight and 4 a.m., when there is very little legitimate consumption of water, will be mostly waste. By closing in succession the

valves in the area governed by the meter, the amount of leakage in different sections of pipes can be located within narrow limits. The actual leaks can then be discovered by inspection assisted by stethoscopes, and measures to stop the waste may be carried out.

20. In conclusion, I may say that a pure wholesome water-supply sufficient for the needs of every man, woman and child is an asset of the very greatest importance. The water-supply has probably a greater influence than any other single factor upon the health of a community. It must be remembered, however, that water is a valuable commodity and must not be wasted or polluted. With the generous assistance of Government, much expenditure is being incurred all over this Presidency to ensure that the inhabitants shall have a water-supply ample in quantity and irreproachable in quality. I wish to impress upon you as forcibly as I am able that, if the fullest possible benefit is to be derived from this great expenditure, the co-operation of every water consumer is needed. The mass of the population require to be taught that they must husband water, and that waste or pollution of water is a crime against society. I trust that you, who are here to-day, and who represent the most enlightened section of the communities in this part of the Presidency, will whenever you have an opportunity, impress these facts upon those with whom you come in contact, and so assist in educating public opinion to a full appreciation of the fact that "wilful waste brings woeful want", so that he who wastes wilfully may be regarded as an offender against the community. A proper public opinion thus formed will be a force which will act as a stronger deterrent than any rules, regulations or fines.



Elementary Education in the United Provinces.

[By RAO BAHADUR A. C. PRANATARTIHARA AIYAR, I.S.O.]

THE United Provinces Gazette of the 16th October last contains a notification which is an important measure of Local Self-Government. It places the District Boards in full charge of elementary education in all its stages and lays down rules for their guidance in order to secure both its extensive spread and intensive improvement.

An educational survey is required to be taken of the rural areas under each District Board, which are to be divided into a number of circles—styled primary circles—each circle representing a village or a group of hamlets, which should have a primary school accessible to the people living within the circle. In a circle where there is no school, one is to be started by the District Board, provided the people guarantee a minimum attendance of 20 pupils. Where such a guarantee comes forth, the school is to be started as a preparatory primary school, i.e., with lower classes than the fourth, and the onus for its continuance and further development is thrown upon the people by the condition that, where the requisite co-operation from them is not forthcoming, the school is liable to be closed. The opening of special schools or classes for the educationally backward classes of the community is also provided for on similar conditions, as well as the working of night schools and half-time schools for day labourers. The fees are nominal, being only two annas a month for the fourth or the highest class and large exemptions from even this payment are provided for. So much for the extension of primary education.

As to intensive improvement, the primary schools are divided into two classes, preparatory and full primary, the latter containing all the classes up to and including the fourth ; and each preparatory school is to be so worked as to be developed in course of time into a full primary school. For higher

elementary education, vernacular middle schools are to be worked in suitable localities and a system of scholarships is to be instituted and a hostel attached to each middle school so as to facilitate the transfer to it of the more promising pupils from the primary schools. The instruction should conform to the curricula laid down by the Educational Department and no books should be taught of which the use is not authorised by it. English is not to be taught in any of these schools. It is, we believe, due to the difficulty experienced in these Provinces of getting competent men to teach that language. It may also be due to the consideration that pupils should have a good grounding in their mother-tongue before taking to the study of a foreign language. But we understand there are facilities provided for the transfer of pupils from Vernacular to English schools by the maintenance at the latter of special classes where the necessary coaching is given to them in English and other subjects of the English course. Each District Board is required to maintain a training school, or a training class attached to a vernacular middle school for the improvement of the teaching staff employed in the primary schools and a system of certification is to be introduced based on such training and on the results of a final examination. The improvement of such teachers as cannot be sent for training is also provided for by the institution, for their benefit, of central sessional classes. A scale of salaries has been drawn up for the teachers varying with their general educational and professional qualifications and the lowest salary of the uncertificated teacher is Rs. 10 a month.

The District Board has also the control of the primary schools under private management lying within its jurisdiction and is liable for grants-in-aid to them. The same rules in regard to attendance and instruction apply to them as to the board schools, and the grants payable are building and equipment grants, which should not exceed the contribution from management, and salary grants of which the limit is the

salary according to the scale drawn up for similarly circumstanced board schools.

A pleasing feature of the notification, and one which may well be copied in Madras, is the recognition it gives to *maktabs* and *pathsalas*, or indigenous institutions working outside the Government educational rules. These institutions are either to be started by the District Board where the demand comes for them, or aided. The relaxation in favour of these institutions which are still so largely popular represents an attempt at improvement on lines of least resistance and the desire to retain what is worth retention and build upon it.

The administration of all these schools, both Board and aided, is, as has been already said, in the hands of the District Boards. They are to be helped in it by (1) local school committees and (2) by the Government provincial inspecting staff. The former are to consist of at least three residents of the locality; and where there are Union Panchayats or other Village Committees already constituted, the school committees are to merge in them. A member of the District Board residing in the circle or in close proximity to it is entitled by virtue of his office to take part in the business of the school committee and to act, so to speak, as intermediary between it and the District Board. The duties of school committees consist in taking measures for securing attendance, the regulation of fees and the granting of exemptions, the prescription of school hours and of holidays and vacations, the provision of accommodation, furniture and equipment, the holding of school anniversaries and competitive sports and games and generally whatever may tend to the well being of the school. They have also to arrange for physical training and for religious instruction outside school hours. They have it thus in their hands to promote school life as far as possible in their little circle. The institution of these committees marks an important step taken in the right place in the direction of self-government and their work will be watched with keen

interest by both the Government and the public. It is hoped that the right men will be appointed to sit on these committees and every possible care taken so as to eliminate the germs of party strife and personal animosities. Proposals have been made in Madras for the formation of such committees, but they have evidently been made to lie over pending the formation of village *panchayats*.

The provincial inspecting staff consists of the Deputy Inspector and the Sub-Deputy Inspector who, among their other duties, inspect all schools under the District Board, recommend teachers for them and make the necessary proposals for their improvement. They co-operate with the School Committees and with them form the executive of the District Board. Though Government officers, they nevertheless act in subordination to the District Board in all matters connected with schools under their charge. The Deputy-Inspector holds his office in a portion of the District Board's office and has clerks and menial servants supplied to him to do the District Board's work. He submits his programme of work and all proposals of other than a routine nature through his Divisional Inspector to the Chairman of the District Board. The arrangement cannot be satisfactory as it involves dual control and loss of time in the despatch of communications. The Government Divisional Inspector is purely an advisory officer and his advice may be restricted to important matters of more than local application and requiring unity of treatment; and for the rest the local inspecting officers may be placed under complete subordination to the District Board.

The notification is conceived and drawn up in the liberal spirit of the Government of Sir James Meston and appears to be an earnest attempt to give a fair trial to the principle of Local Self-Government and to promote the spread of education through local agency. There is little in the notification that is new to Madras; indeed Madras is educationally ten years ahead of most other Provinces in India and has thought out

and worked out schemes of improvement now coming to be introduced in those provinces. But, however good in itself a principle may be, it may be made to lose much of its worth and to be given up as unsuitable by the cold and even contemptuous manner in which it is worked. On the other hand, its unqualified success may be assured by a sympathetic and zealous application of it. The work done in Madras has not been of a steadily progressive nature, but there has been much shifting to and fro. I hope to take up in a subsequent number the relationship of the local boards and municipalities in Madras to education in general and to elementary education in particular.

Sunshine and the Building Bye-laws.

IT was recorded ages ago that it is a pleasant thing for the eyes to behold the sun. This ancient wisdom does not find its proper counterpart in our legal system. The inspiring as well as germicidal character of sunlight require that in the design of buildings proper provision shall be made for the admission of light, and that as much light as is necessary for full use and enjoyment of the building, consistent with other factors, should be provided. It comes as a surprise to realize that in the provisions of the Public Health Acts authorising the making of building bye-laws, nothing is said about the need for a sufficiency of light. The nearest approach is the provision that an urban authority may make bye-laws with respect to the sufficiency of space about buildings to secure a free circulation of air. Unless a rural authority have applied for and been invested with these urban powers, they have no control over the structure of buildings in this respect. It is quite consistent with these bye-laws for buildings to be erected containing dark rooms in which the sun never enters and never can enter, and for these rooms to be used as dwellings. The only limit to ignorance of the fundamental requirement of light as a necessity for human welfare appears to be that a local authority may make a closing order if it thinks a dwelling house is in a state so dangerous or

to health as to be unfit for human habitation, or it may make a reconstruction scheme under the Housing of the Working Classes Acts, if it thinks the buildings are unhealthy by reason of narrowness, want of light or air, or some other sanitary defect. Needless to say, when only heroic remedies are available, many evils are tolerated. This strange condition of affairs appears to spring from the doctrines in our legal system as to light. An owner of land has at common law no right to light. Any one may build upon or otherwise utilize his own land, regardless of the fact that his doing so involves an interference with the light which would otherwise reach the land and buildings of his neighbour. Any one may open windows on to his neighbour's land. On the other hand, the neighbour may, by building on his own land, obstruct the light which would otherwise reach the other's windows. A right to light can only be acquired in respect of a window or other opening in a building after its use for a certain number of years, and only a substantial interference with its comfortable use and enjoyment is actionable as a nuisance. It would not be regarded as a substantial interference to build an obstruction whereby the whole of the direct sunlight was cut away from a neighbour's windows for the greater part of the year. Nor is this the limit of the law of light. The easement of light can only be enjoyed in respect of buildings. The use for centuries of an open space in a particular way requiring light does not preclude the adjoining owner from building on his own land so as to obstruct the light. The rational construction of town developments to ensure health ought to provide for the penetration of the direct rays of the sun into all courts and yards attached to dwellings, and into all dwellings. For any particular degree of latitude on the earth's surface, the angle at which the sun's rays can enter dwellings is constant.* With a particular size and aspect of window, the amount of sunlight

* The maximum and minimum angles may be calculated thus for any given place:

If x = latitude, then maximum angle = $90 - 23\frac{1}{2} + x^\circ$; minimum angle = $90 - 23\frac{1}{2} - x^\circ$.—Ed.

which can be received into a room with a particular depth can be fixed with certainty. In England the angle at which the sun's rays shine upon the earth varies from 15° at noon in winter to 62° at noon at summer. It therefore becomes a simple matter to calculate how much sunlight a particular window can receive; and how far into the room the sun's rays can shine. Proposals have been made in New York for a code of building bye-laws which recognise these facts, but the extent to which they do so is symptomatic of the difficulties which reformers have to face in the matter. Taking the angle of the sun's rays at midsummer, when the sun is highest, as a criterion, the bye-laws propose that no court or yard attached to a building shall be permitted, unless the sun can shine upon some portion of the surface of the court or yard for one minute on midsummer day. These proposed bye-laws would be complied with if for the rest of the year the sun never reached any part of the surface of the yard. The facts now known as to the beneficence of sunlight, its tonic powers, its value as a microbe-destroyer, the activity of the ultra-violet rays, show that sunlight is a supreme necessity. The penetration of the sun's rays into all corners of a city is essential to its healthiness. The crowded conditions of old towns are a menace to health, reflected in its statistics of disease and mortality. Codes of rules proposed for the construction of hospitals enjoin that to obtain ideal conditions for the hospital, a free space, or sanitary zone, should surround the hospital, never less than double the height of the highest of the surrounding buildings, and that the form of the hospital should be such that there should be free play of sunlight upon each ward during some portion at least of the day. Such conditions cannot be expected to be obtained in ordinary urban construction, nor are they in all respects necessary. At the same time, there are some simple modifications of the prevalent designs of streets and buildings which would ensure that they approached nearer to the ideal in these important respects. Particular attention should be paid to the orienta-

tion of streets, and to their width. As far as possible, streets should be designed and laid out with such regard to the points of the compass that the buildings erected on the streets may receive the maximum amount of sunlight in their rooms, having regard to the times when such rooms are likely to be used, and the uses to which they are to be put. Upon the orientation of the street depends the orientation of the building. A building badly orientated is fated to become, sooner or later, more or less an unhealthy dwelling. Nor is this the only consideration. A rationally designed street with a particular orientation and width should have upon it buildings whose height, limited according to the angle at which the sun's rays fall, is such that adjacent buildings are not deprived of their necessary measure of light. As to the building itself, its design and interior arrangements should be such that the best use is made of its place in the sun. None of these requirements are inconsistent with artistic, varied, and beautiful houses, nor with beautiful surroundings. But they are at present far beyond the scope of bye-laws.*

Audit of Municipal Accounts.

[BY B. SREENIVASIENGAR, B.A., B.L., ASSISTANT
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General Explanation.

THE rules and regulations in force in all the Provinces of British India in regard to the constitution and working of Municipalities provide finally for two systems of audit of their accounts, *viz.*, the concurrent or continuous audit by auditors appointed by the Municipal Councils, and also the annual audit by technical officers of Government.

The suggestions and the list of questions herein contained are intended primarily for the information and guidance of auditors appointed by the Municipal Councils.

* Reprinted from the Local Government Chronicle.

Suggestions for Audit.

1. The general principles of audit which must be borne in mind by all auditors undertaking the audit of Municipal accounts are:—

(a) that all sums due to, and received by, the Municipality have been brought to account,

(b) that all expenditure is covered by provision in the annual budget of the Municipality,

(c) that it has been incurred under sanction by competent authority,

(d) that all payments made have been made to the proper persons and so recorded that a second claim against the Municipality cannot be preferred or passed.

The above general instructions require to be materially amplified.

2. Before taking up the audit of the accounts the auditors should have the following books of reference :

(a) All Acts and Regulations governing the constitution of Municipalities in force in the Province, and copies of all rules and bye-laws, passed by the Municipality thereunder.

(b) The Municipal Account Code or Manual, if any, published by the Accountant-General of the Province.

(c) Latest Administration Report of the Municipality.

(d) Sanctioned Budget for the year current.

(e) Municipal Proceedings Book.

(f) Office Order Book.

(g) File of Circulars issued by Accountant-General and by Government, relating to Municipal accounts, if any.

3. The auditors should first satisfy themselves whether the previous report of the auditors was considered by the Municipal Council and necessary action taken in respect of it.

4. The audit to be conducted by them may be divided into 4 parts, viz:—

Part I. The checking of every entry in the few important registers—the General Cash Book, the Petty Cash Book, &c., with reference to the original challans and vouchers and other records.

Part II. The audit of expenditure and vouchers.

.. III. The examination of receipt items.

.. IV. Lastly, a general review and examination of the monthly accounts and other registers.

5. Definite suggestions regarding the work to be done under each of the above heads are given below and the printed set of questions relating to each part should be taken up and answered in accordance with those instructions.

PART I.

[Examination of Registers.]

6. The following books and records should be examined in detail for the month under audit in accordance with the instructions given below and the printed set of questions answered, simultaneously with such examination :

(a) The General Cash Book.

(b) Petty Cash Book.

(c) Imprest Account or Contingent Register.

(d) Acquittance Roll.

(e) Bill or voucher file (for expenditure incurred).

(f) Receipt books, remittance registers, or other original records evidencing receipt of money.

7. The cash balance on hand in the Municipal Office should first be examined, and verified with the cash book balance, worked up to date of audit in the petty cash book. It should also be seen whether a petty cash book as distinguished from the general cash book is maintained and whether the distinction between the two books is correctly understood.

The general cash book is intended to show all receipts and payments pertaining to the Municipal Fund and is the principal account with reference to which, the ledgers, the monthly account, the deposit and other subsidiary registers are either prepared or verified.

The petty cash book on the other hand will, if properly maintained, ensure the proper utilisation of all money received in the Municipal Office (either in cash or by cheque), whether as creditable to the Municipal Fund, or on account of payments to be made from the Municipal Fund to the establishment as pay or to contractors, &c., for work done.

8. The entries in the general cash book should be examined in detail, item by item, the receipt entries with the original chellans, remittance memos, receipt books or other original records—produced in support of them, and the debit entries with the vouchers serially numbered for each month and filed.

In the petty cash book the receipt entries relating to revenue received in the Municipal Office will be checked with the credits in the general cash book, while those regarding money and cheques received for disbursement will be checked with reference to the expenditure entries in the general cash book. The debits in the petty cash book are to be examined with reference to the payee's receipt or other legal acquittances obtained.

9. In Municipalities having heavy transactions where the honorary auditors appointed by the Municipal Council may not afford sufficient time and leisure to conduct a detailed audit and one or two auditor clerks may be required to be appointed to help them, the detailed checking of the entries in the general and petty cash books may be performed by such audit clerks and the auditors should satisfy themselves about the correctness of the entry in these books by checking a few percentage of them.

10. The further examination of the several books, &c., mentioned in paragraph 6, will be clearly indicated in the printed set of questions.

PART II.

(Expenditure Audit.)

11. A certain amount of technical knowledge is necessary to conduct the audit of expenditure vouchers. And it may be presumed that this portion of the work will receive special attention at the hands of Government audit officers.

12. But as the audit by these officers will be conducted only once a year, it is not desirable to allow irregular and unauthorized payments to remain unchallenged till the arrival of the Government auditor. Items of expenditure should therefore be reviewed by the Municipal auditors monthly with reference to orders of competent authority, scale sanctioned and provision made in the budget, &c.

13. The set of questions formulated (1—24) will sufficiently indicate the procedure to be adopted by the auditors if they are possessed with a general knowledge regarding the purpose and scope of audit of public accounts.

PART III.

(Audit of Receipts.)

14. This is an important item of work and the auditors should pay their special attention to it. Not much of technical knowledge is here required and the Municipal Councillors have a distinct advantage in this respect over the Government auditors in that they can bring to bear their local knowledge, detect cases of malpractices of keeping back money collected, of making alterations in receipts, of peculation by subordinate employees, omissions of demand, &c.

15. The auditors should see generally that—

(a) a regular record of all sums due to the Municipality is maintained,

(b) that adequate steps are taken for their regular and prompt collection, and

(c) that all items of money received by Municipal employees have been duly brought into account in the Municipal Office and remitted to Treasury without undue delay.

16. The auditors should first ascertain and note the various items of revenue and receipts of the Municipality as entered in the budget and see whether proper demand and collection registers have been maintained in respect of all of them and in the prescribed forms.

17. The entries in the several demand and collection registers should then be examined, with reference to the counterfoils of receipts, remittance registers or other records in detail for the whole month or for a few days in the month selected at random as may be desired by the Municipal Council, and the printed set of questions answered.

18. In Municipalities having large transactions, the detailed checking above described may be made by the audit clerk under the control of the audit committee or honorary auditors and the result reported to them.

PART IV.

[General Examination of monthly accounts.]

19. No special instructions in addition to what have already been given seem necessary in respect of the work under this part, and the printed set of questions indicate, fairly clearly, the line of procedure to be adopted.

The auditors may, of course, examine any registers or other records, not specifically mentioned here, with a view to detect and put a stop to irregularities or malpractices that may be suspected to have been committed, and frame additional questions for being answered by them.

20. After the completion of the audit above described the auditors should affix their signature in the general cash

book in token of their examination, and prepare a complete set of answers to the printed questions (Part I to IV) for submission to the Municipal Council. No separate audit report need be drawn up by them except when they consider it necessary to refer to irregularities noticed by them or to make suggestions for the consideration of the Municipal Council.

Questions to be answered by the auditor.

PART I.

1. General Cash Book.

- (1) Is it posted up to date?
- (2) Has it been closed for the month under audit, signed by the President or Vice-President, and the closing balance agreed with the Treasury pass book?
- (3) Has a chellan been obtained for every entry of receipt and have all such chellans been properly filed? Mention the omissions, if any.
- (4) Has any item of money which appears to have been collected by reference to the original receipts or other records been omitted to be brought on the cash book or remitted to treasury? If so, why?
- (5) Is a bill (voucher) obtained in support of every debit entry and is it serially numbered?
- (6) Are all the bills supported by proper payees' receipts either separately taken or recorded on the bills themselves?
- (7) Mention the instances where proper payees' receipts have not been obtained and the reasons therefor as far as they are ascertained.

2. Petty Cash Book.

- (1) Is it written up to date and are the balances struck daily and verified?
- (2) Has every entry in it been initialled by the Vice-President or Secretary or at least the Manager of the Municipal Office?

(3) What is the balance, cash, cheques, &c., on hand on the date of examination and does it agree with the balance as shown in the book?

(4) In whose custody is the money kept? If the money is in the custody of any official subordinate to the Vice-President, has proper security been obtained from him?

(5) What are the details for the cash balance on hand? Mention the amounts under the several heads, revenue received but not remitted, undisbursed pay, &c., imprest and other items.

(6) Has any amount of money received in cash or by cheque on account of pay or travelling allowance or as payable to contractors been kept on hand for over a month, and if so, why?

(7) Mention the reasons for keeping on hand, if any items of revenue or other receipts are unremitted to treasury.

(8) Mention the omissions, if any, noticed of instances of money or cheques received in the Municipal Office but not recorded in the petty cash book.

(9) Are the recoupments of imprest and the daily total of receipts and payments on account of pay and travelling allowance regularly incorporated in the petty cash book?

3. Imprest Account or Contingent Register.

(1) Is a regular imprest account or permanent advance and are contingent slips, etc., maintained and posted up-to-date?

(2) Does the imprest balance shown in this book agree with the details shown in reply to question 2 (5)?

(3) Is the imprest regularly recouped at least once a month?

(4) Are there any advances or irregular payments made out of it and unadjusted?

4. Acquittance Roll.

(1) Has an acquittance roll been maintained for recording the disbursement of pay and travelling allowance to Municipal

employees, and are regular acquittances taken in all cases (with receipt stamps also for payments exceeding Rs. 20) ?

(2) Does the total of undisbursed pay, etc., as per this book agree with the balance shown in reply to question 2 (5) ?

(3) Is undisbursed pay outstanding at the end of each month invariably short drawn in the next month's bill ?

(4) Is the establishment pay drawn as per scale provided for in the budget, and shown in an establishment pay or check register ?

5. File of Bills and Vouchers.

(1) Are the bills and vouchers serially numbered for each month ?

(2) Are they properly arranged and readily produced for credit ?

(3) What are the missing bills and vouchers ?

6. Receipt Books, &c.

(1) What are the several books produced for examination ?

(2) Are they in continuous series ?

(3) Are printed receipts books having counterfoils invariably used in respect of all cases of receipts received from the public ?

PART II.

Expenditure Audit.

(1) Are all the bills arranged (serially numbered for each month) according to dates of payment, and are the references given in the general cash book ? (Vide Part I, question 1).

(2) Do they bear the pay and paid stamps ?

(3) Are all of them supported by proper payees' receipts or other legal acquittances, either recorded on them or obtained separately ? If not, mention the omissions.

(4) Are the establishment bills drawn according to the scale provided for in the sanctioned budget and entered in an establishment check or pay register, and are they copied out exactly in the acquittance roll.

(5) Are the pay and allowances drawn in accordance with rules ?

(6) Is every establishment bill (original) accompanied by an absentee statement or contra certificate ?

(7) Is an increment or conveyance certificate attached in all cases where the bill includes claims on account of periodical increments granted or conveyance allowance drawn ?

(8) In the supplemental bills drawn for arrear claims, are the references to the original bills in which the claims were held over for future payment or in which undisbursed pay was refunded, invariably given ?

(9) Has note of the payment of such claims been made against the corresponding entry in the original bill to guard against second claims being prepared and passed ?

(10) In cases of arrear claims exceeding two years, has special sanction of competent authority been obtained ?

(11) Are any travelling allowance claims paid without special sanction ?

(12) Are all travelling allowance bills prepared and paid copied out in the acquittance roll or in a separate register so as to guard against double claims being preferred ?

(13) Are the amounts drawn on contingent bills provided for in the budget ?

(14) Has every contingent charge been duly sanctioned by competent authority—the president or other subordinate officer authorised by him, Municipal Council or Government, as the case may be ?

(15) Have the purchases of articles of a non-perishable nature been duly entered in a stock account ?

(16) In respect of pound and other commission bills, bills for refund of feeding charges, refund of net sale proceeds of impounded cattle sold and credited to revenue as lapsed, refund of revenue received and refund of deposits, etc., have the bills been prepared in the prescribed form ?

(17) Have references been invariably given in them to the original audit entry in the Municipal Office general cash book or other subsidiary registers, and note of the claim having been preferred made in the latter to guard against double payment?

(18) Are the bills prepared in the prescribed printed form and are they arithmetically correctly made out in accordance with the entry in the measurement books and the register of Public Works?

(19) Is reference to the sanctioned estimate invariably quoted on every bill?

(20) Has any Public Works bill been paid in respect of any work without a duly sanctioned estimate, or in excess of such estimate or otherwise than in accordance with such estimate.

(21) Do the rates passed in the bill exceed in any case those entered in the schedule of rates, or the sanctioned estimates? If so, details of such excesses should be given.

(22) Has any Public Works payment been made without proper provision or in excess of the provision made in the budget?

(23) Is the calculation of the entries of total quantity in the measurement books correctly made out in the cases (a certain percentage) selected for examination?

(24) Are there any cases of advances paid to contractors or others on account of work not executed; and if so, what is the authority therefor?

(25) Are purchases of Public Works tools duly entered in stock account?

PART III.

Audit of receipts.

I. Assessed taxes i.e., House, Land, Water, Lighting, and Conservancy taxes and Mohatarfa :—

(1) Have the assessment list, demand register or khate, collection and remittance register and the Murtaham register,

been maintained in the prescribed forms, and have all of them been written up and authenticated for the year under audit ?

(2) Have the arrears outstanding at the end of the past official year preceding audit payable by each individual, or in respect of each individual property been completely made out and the totals verified with the entries made in the Demand Cash and Balance Statement for the first month of the next official year ?

(3) Have the postings of arrears and the items of current demand into the Demand and Collection registers been examined by anybody other than the writer ?

(4) What is the system adopted for the collection of taxes ? Are paid bill collectors appointed to work whole time or is the collection made through the hereditary agency of Patel and Shambhogue on payment of commission, and in the former case has security been obtained from the collectors ?

(4 a.) Is the system of issuing bills or receipts signed by the Vice-President in respect of assessment taxes adopted ?

(5) Are receipts granted in printed forms having counterfoils for all collections of taxes ? Mention may be made of items of credit for which no receipts appear to have been granted.

(6) Has the posting of every item of receipt as per counterfoil receipt book or other document into the collector's collection book been satisfactorily examined and the totals in the latter verified at the Municipal office at the time of each remittance ?

(6 a.) Are all the counterfoils of receipts issued produced for examination and are they in chronological order ?

(7) What is the percentage of entries selected by the auditors for examination ?

(8) Has any item of money purported to have been received by collectors or other subordinates been kept out of account and unremitted to Treasury ?

(9) Are the arrangements made for the collection of current and arrear taxes satisfactory ?

(10) Is the supervision exercised over the work of auditor subordinates effective ?

(11) Are there any items of demand omitted to be brought on the assessment list or demand register or in respect of which the demand entered is unduly low or are there any cases of exemptions from taxation ?

(12) Has the Demand, Cash and Balance for the month prior to the month of audit been prepared and placed before the council.

(13) Are any items of demand brought on the remission list without proper scrutiny ?

(14) Are the prescribed registers maintained for recording notices issued, warrants taken out and remissions granted ?

(15) When was the last general revision of taxes made ?

II. Octroi.

(1) What are the several articles on which octroi is levied ?

(2) Is the recovery of duty invariably made in accordance with the sanctioned rates and as entered in the Administration report.

(3) Are any lookeds established to watch the import of dutiable goods and are the mutsaddies in charge of their posts empowered to collect duty and issue receipt and if so has proper security been obtained from them ?

(4) What is the arrangement adopted for the collection and remittance of octroi duty and is it satisfactory ?

(5) Are the entries in the counterfoils of receipts issued by the octroi official invariably examined at the head or Municipal office at the time of each remittance ?

(5 a.) Are all the counterfoils of receipts produced for audit and are they in chronological order ?

(6) From an examination of entries for a few days selected in the counterfoil receipts for check, are the auditors

satisfied that every item of money received has been duly brought to account ?

(7) Are there any erasures or alterations made in the counterfoils of receipts with a view to reduce the quantity of article imported or the rate of duty leviable, and if so are they satisfactorily explained ?

(8) Is a bonded warehouse established for the storage of articles pending recovery of duty and are proper storage fees levied ?

(9) Are the importers allowed in any case to take goods into their shops before payment of duty ?

(10) What is the result of the scrutiny of refund claims ? Have proper precautions been taken against granting refunds in any case without tracing the credit and without note of the refund having been made against the credit entry ?

III. Pounds.

(1) Is the pound register maintained in the prescribed printed form and is it written up to date ?

(2) Are all the counterfoils of admission receipts and release passes produced for audit, and are they in chronological order ?

(3) Are the entries in the pound register invariably checked with the release passes in the Municipal office at the time of each remittance ? What is the percentage of entries examined by the auditors ?

(4) Is the entire amount of money recovered by the pound-keeper whether as fine or feeding charges remitted by him without keeping any portion with him and are the remittances made by the pound-keeper at least once a week at District or Taluk headquarters and once a fortnight at other places ?

(5) Are any entries originally made in the counterfoils of admission receipts or release passes, erased or otherwise tampered with ? Give a list of the suspicious entries and the amounts of fine involved.

(6) Are the fines correctly levied in accordance with the cattle trespass regulations and the feeding charges at rates sanctioned by the Municipal Council ?

(7) Are all the records of sale of impounded cattle produced for examination, and are the sale proceeds duly remitted to Treasury through a remittance register ?

(8) When the pound-keeper is entertained on payment of commission on fines recovered, are the commission and feeding charges bills regularly prepared and paid and are the credits in the Municipal Office cash book invariably traced, and is the fact of the preference of the claim noted against the entries to guard against a double claim ?

4. Tolls and other Miscellaneous items of revenue.

(1) What are the several items of miscellaneous revenue and how are they collected—whether by departmental management or by contract or as sale proceeds at auction sales ?

(2) Have the required demand and collection registers been maintained to ensure the prompt recovery of such receipts and their remittance ?

(3) When the collection of tolls, or market fees is made through paid staff, what are the reasons for not farming out the collection, and are proper steps taken to ensure that all amounts collected are duly remitted ?

(5) In the latter case, are the khists regularly paid by the contractor, and if not, is penal interest invariably levied on belated payments ?

(6) What are the several classes of license fees levied ? Are printed forms of licenses used and are the fees recovered regularly brought to account ?

(7) Has a register of all immoveable properties belonging to the Municipality been maintained in the prescribed form ?

(8) Have all the sites in the possession of the Municipality been included in it ?

(9) Is the disposal of sites made during the period under audit under the orders of competent authority and is it duly noted in the register ?

(10) Is a regular demand of site value recoverable entered in a special register and are the recoveries promptly made ?

(11) Have the sites sold to private persons during the period under audit been properly brought on the assessment list and regularly assessed to land tax ?

PART IV.

General examination of accounts and ledger.

1. Ledgers and Monthly Accounts.

(1) Are the ledgers (classified abstracts) written up day by day in the prescribed printed form ?

(2) Are the adjustment entries also recorded in them and the monthly totals made out and the opening and the closing balances entered and agreed with the corresponding entries in the cash book ?

(3) Are the entries in the monthly accounts copied out from the ledgers for being placed before the Municipal Council and for submission to the Accountant-General or other authority ?

2. Deposit Register.

(1) Have deposit registers been maintained in the prescribed form and entries of receipts and expenditure regularly posted in them ?

(2) Are totals made out monthly and the plus and minus memo prepared and agreed with the entries in the ledger and monthly accounts ?

(3) In all cases of refund of deposits (in cash) are precautions taken to verify the claim with the original audits, and to note the claim against such entries before making payments ?

3. Advances, etc.

Are there any advances other than permanent advances made from the funds of the Municipality and, if so, has an account been maintained to watch their prompt recovery ?

The Milk Question in Calcutta.

[BY CAPTAIN J. MATSON, I. A., ASSISTANT DIRECTOR OF MILITARY DAIRY FARMS, NORTHERN CIRCLE, BENGAL.]

(1) *The law should prevent the sale of adulterated milk.*

(a) The first thing necessary in this connection is a standard of purity. (In these notes I use the word "pure" in relation to milk as meaning milk which has not been added to or subtracted from, not as meaning "clean.")

Many people seem to think there is a special difficulty in framing a standard for this country. I can see none.

It is true that in a certain large Indian City, regulations which (I am informed) tried to set up two standards, one for buffaloe's and one for cow's milk, have not been very effective, as I have personally seen, but to that I would say, first, that the attempt at two standards was far too ambitious and had no hope of success from the beginning; secondly, that it is useless having a law, or, rather, looking to a law for a certain result, unless the agency employed to set that law in motion, is *competent and reliable*.

So far from any difficulty it appears to me easier to fix a standard which sufficiently protects the consumer in this country than in Europe.

No difficulty in framing a standard.

For the reasons, first, that India contains none of those breeds of cattle which naturally give milk of a rather poor quality, secondly, even if European breeds are imported for crossing, with indigenous animals, the extensive trials already made in the Military Dairy Farms show conclusively that the offspring give milk of a quality approximating to that of the Indian parent.

Buffaloes' milk is, of course, considerably richer than cows' and a standard fixed for cows' milk may not ensure that when buffaloes' milk is sold it will be as it left the animal, but I think people will be satisfied if they get milk which is either

pure cow's milk, or its equivalent, and in any case, there is no escape from the difficulty, if it is one; nor is it avoided now.

Moreover, so far as Calcutta is concerned, the great bulk of the milk supply is derived from cows, so that the question is of little importance.

As to what the standard should be, I recommend $3\frac{1}{2}$ per cent. fat, $8\frac{1}{2}$ per cent. of other solids, total solids 12 per cent. for new milk, $9\frac{1}{4}$ per cent. of solids for skimmed or separated milk. (The latter is unimportant here, but should be provided for in any law on the subject, with the express proviso that it may only be sold when clearly notified to the purchaser as such.)

That standard, which, as to the fat, is one-sixth higher than the English standard (3 per cent.) and as to the other solids, similar, is one that no Indian cow owner can possibly have any difficulty in conforming to for reasons given above.

The Committee which reported in 1900 on proposed amendements to regulations issued by the (British) Board of Agriculture under Section 4 of the Food and Drugs Act, 1899, reported (one dissentient) in favour of total solids 12 per cent., fat 3·25 per cent. as a minimum standard.

The one dissentient proposed total solids 11·25 per cent., and fat 2·75 per cent. with variations as to seasons.

The regulations as finally published, in the London Gazette, (6th August, 1901), fixed the limits of fat at 3 per cent., of other solids at 8·5 per cent. It may be confidently asserted that relative to the average quality produced, in either country, $3\frac{1}{2}$ per cent. fat and 8·5 other solids would be an even less exacting standard in India, than 3 per cent. fat and 8·5 per cent. other solids in England.

The National Pure Food Law of the United States, *i.e.*, statutes governing inter State Commerce, lays down 12 per cent. total solids, $8\frac{1}{2}$ per cent. solids other than fat, and $3\frac{1}{4}$ per cent. fat for standard milk; for standard skim milk $9\frac{1}{4}$ per cent. solids.

This law generally is deserving of very careful study by those considering legislation in this matter.

In different States the standard of fat varies from 2·5 per cent., in Rhode Island to 3·5 per cent. in Minnesota (3·7 per cent. in winter only in Massachusetts) the total solids vary from 12 per cent. to 13 per cent.

It may be mentioned that in most of these cases, the law does not, as in England, stop short at saying that a lower quality, when found, shall merely raise a "presumption" that the milk has been adulterated, more often it provides that an offence is established, by possession for sale, of such milk.

It is generally recognised that this is the more logical view, and that the protection remaining to dairymen in the English law, is due to the influence of vested interests. It is more logical because the consumer is entitled to protection just as much from the man who, by creating abnormal conditions, succeeds in obtaining abnormally poor milk from his cows, as from the man, who getting good milk, then adulterates it. Similarly the consumer is entitled to protection from the milk of the occasional cow which, living under apparently normal conditions, gives abnormal milk, just as he is protected, in most countries, from the milk of the cow which is diseased.

There are freaks amongst cows as in other animals, but a dairyman who possesses one should not be encouraged to keep it.

(b) Now, as to the alleged difficulty advanced by so many, as to the vendors simply continuing their practice of adulteration, and claiming exemption from prosecution because of placards or notices supposed to inform the customer of the adulteration, I would say that in Calcutta, I did not find this practice used, or relied on nearly as much as I had been led to expect.

Some vendors advertise adulterated milk.

At the Baithakhana Market there was not one such notice, while at Jorasanko there was no "rush to exhibit" them when, in company with the Inspectors, I entered the Market ; on the

contrary, the notices, when asked for, were hunted up from under seats and in corners. There were, however, numerous brass plates engraved with such notices, affixed to cans, but it cannot be said they are easily, or would usually be, seen, by a purchaser otherwise ignorant of their existence, or that such purchaser is by them informed, when supplied with a fluid from the cans, in response to a demand for milk, that such fluid is not milk, but a mixture of milk and water.

I cannot believe that any Magistrate would so hold.

However, the difficulty exists in the background, and should be provided for, so I cordially endorse the recommendation of your Health Officer (a) at the head of page 11, minutes of proceedings of a Committee which met on the 15th of November, 1910.

Similarly, I endorse the resolution moved by the Hon'ble Mr. Apcar at the meeting of the 19th August, 1913, with the reservation that it is not practicable to prohibit the sale of anything but pure milk *exactly in those terms*. It is necessary to allow butter makers to dispose of the skimmed or separated milk, but if the law recognizes separated milk as such, provided it is proclaimed (but no mixture of separated and pure milk), there is no good reason against making it an offence to sell a mixture of milk and water, or any form of adulterated milk.

Arguments to the contrary in my experience are almost invariably put forward either by interested parties, or by persons who, often unconsciously, have been primed by those interested parties.

The fact that the law does not go so far in England is no argument. The reason it does not is trade opposition; nor are the other conditions the same; we have far greater difficulties to overcome here.

I do not know if the Corporation found it impracticable to obtain legislation in accordance with the resolution of the Hon'ble

Mr. Apar's suggestion of 19th August, 1913. If that is the case, and it cannot be taken up again, the best thing is to apply a practice common in other countries as regards certain foodstuffs and manures.

Under that system the vendor of a notified commodity is compelled to give to each purchaser a written guarantee showing, within defined limits, the percentages of certain ingredients present in the stuff sold. If, later, it is found that the quantity is less, outside the limits named, a conviction follows. It would surely be easy to frame a law applicable to a Municipal Area, under which any person selling milk in other than its natural and pure state, would be required to give the purchaser a statement in writing of —

Alternative method of discouraging adulteration.

- (i) the percentage of added water, within a variation of 1 per cent;
- (ii) the percentage of milk fat present within 1 per cent.
- (iii) the percentage of other solids present within 1 per cent.

A purchaser, in possession of such figures, would soon clamour for really pure milk, and would readily pay more for it; that apart, the vendor would have to be exceedingly careful in his adulteration, and would almost certainly find it not worth while.

As yet the method is not in use anywhere as regards *milk*, but then, nowhere else is the fraudulent milk vendor so shameless. It is of course a *sine qua non* that for the setting in motion of a punitive law you should employ persons who know what they are about, and can be relied on to act impartially and reasonably.

I, however, very strongly recommend that nothing be left undone to obtain legislation on the lines first above outlined in preference to any other course.

(ii) Having your law to compel milk to conform to a standard of purity, it is obviously of little value unless you also have the power to bring all milk, produced, under effective examination.

Ensuring that all milk shall be inspected.

Now that is by no means an easy matter, in fact I think it impossible in Calcutta, with any practicable scale of inspectional staff, unless aided by special measures; therefore, there must be power to establish *Municipal Milk Markets*, to compel (as may be necessary) milk to be sold only in these, or other places appointed; to compel the owners to submit it to such examination as may be prescribed.

The ordinary person would think sampling and testing, if energetically carried out, would prevent or keep adulteration to small dimensions — by no means. It has been calculated that in a certain town in England where as it happens, the Food and Drugs Act is well enforced, and a large number of samples of milk is examined, a fraudulent vendor would be detected by analysis once only in six months, and that his profits would amount to many times the amount of any fine that could be levied, let alone the fine that would be likely to be levied. I fear it would be still worse in a supply produced in Calcutta, especially Suburban Calcutta.

(iii) On the sanitary side there must be power to compel the owners to submit the milk to any cleansing process set up by the Municipality, or to themselves subject it to such process prescribed by the authority.

There must be power to establish a *Municipal Dairy Farm*, if needed, and to acquire such land as may be needed for these purposes.

There must be power to license persons outside, as well as inside the Municipal boundaries, and to inspect and control those persons, and to deny access to all milk which does not comply with the rules. Under such licenses, applicable to all cowkeepers for profit, there must be rules dealing with clean sheds, clean surroundings, the keeping of animals' bodies clean.

The milkers to have clean clothing and persons while milking and carrying milk.

Sterilizing of vessels, vessels of approved pattern.

Protection of the milk from flies.

Protection of the milk from touch by human hands, etc., and various other details to be decided.

Also under such licenses there should be *power to prohibit the sale of milk* from cattle or premises, the milk from which is certified by an authority (to be selected) as repeatedly found unduly contaminated, on bacteriological examination.

This matter is important. It appears that no complete bacteriological examination of the Calcutta milk supply has been made, that is, so far as my information goes.

Bacteriological examination of milk.

I think it most desirable that such an examination of the milk should be made ; the samples to be collected by somebody who knows what is wanted, so as to show the condition of the milk at all stages, from leaving the cows' teat, to consumption.

The examination should be aimed at discovering, first, the degree of infection at each stage, second, the classification of organisms present. It is suggested that the technique of Siwithinbank and Newman (Bacteriology of milk) might be followed, or any more up-to-date methods known.

The Health Department doubtless has all necessary works on the subject.

The bacteriological research should not of course stop at the initial examination of the supply, but would continue for ever.

In regard to all the above, however, it should be noted that in the first place, it is only the *power* that is needed ; it does not follow that all these would be introduced together, indeed many are obviously alternative.

(To be continued.)

City Planning.*

IN different parts of the world and at different times men have made their shelters or houses in different ways. A cave, a tent of skins, a bower of branches, a snow hut, a log cabin, a house perched on stilts in the water, houses of brick, of mud, of planks, of concrete, of sheet iron, palaces of stone or marble, all these and more, men have used for shelter from their natural foes—from wind, rain, sun, cold, snow, hail, and wild animals.

To protect themselves from human foes men have come together into communities, bringing their dwellings close together, and thus forming villages, towns, and cities.

Many a city has grown, from village to town, and from town to city, because its position was good for trade. Before the days of railways, this meant generally a site on a river or on a good sea or lake harbour, or at the crossing of caravan routes. Nowadays the route a railroad chooses often decides whether a city shall grow or decline.

The discovery of ores develops mining towns; waterfalls cause manufacturing cities to grow.

The reason why the maps of most cities are so much like a puzzle is that the people who lived in them at first did not know how large they could grow to be, which way they could expand.

Streets in European cities laid out to accommodate the few foot passengers, and narrow carts or horseback riders of an age when wide carriages were unknown, are too narrow to permit the passing of the modern automobile truck.

Again, a real estate owner may lay out, in a tract he has bought by the acre and wishes to sell by the lot, streets wide enough for palaces or skyscrapers to front on; then, when small cottages are built there, only one or two wagons a day

* Abstract of a leaflet issued by the Board of Education for the Study of Newark in the Schools of Newark, N. J.

will travel where there is room for several carriages abreast. But the cottage owners must pay for much useless paving on a street three times as wide as is really needed.

There are many more ways in which mistakes can be made in the building of cities, to the injury of health or convenience, or beauty, or usefulness, or to the great loss of time and money. Just by looking at his own city, anyone can make a long list of these costly errors.

Therefore, within the last generation, *city planning* has been adopted in many cities. Among the American cities that have made or are making great advances in improvement are Washington, D. C., on which Congress is spending money belonging to the country to make a world famous capital city; Boston, which is creating an immense system of parks; St. Louis, Cleveland, Baltimore, Philadelphia, Kansas City, Buffalo, Harrisburg, Hartford, Madison (Wisconsin), San Francisco, and some fifty others.

The greatest names in city planning are those of Haussmann who re-planned Paris, and L'Enfant, who planned Washington, both Frenchmen. Perhaps the most advanced country in scientific planning is Germany. But it is hard to find any country which is without fame in this respect. South America, Australia, Asia, and Africa vie with Europe and America in planning for the future. They will not make the mistake of London, which after the great fire of 1666, refused to consider the plans of Sir Christopher Wren and so suffers to-day, when it is too late to rebuild save at very tremendous expense. They would rather follow the example of Paris which, a couple of centuries later, spent five hundred million dollars in improvements, but receives money enough every year from admiring visitors to pay all the expenses of the city government.

This making over of old cities, tearing down buildings, widening streets, changing sewers, regrading, digging tunnels, filling hollows, dredging channels, buying for parks land at

great prices which once could have been bought for little, is expensive and troublesome. So the sooner any city begins, the better.

There are a few cities being built nowadays according to plans laid out beforehand. In 1906 the United States Steel Corporation began, along eight miles of the Indiana coast on Lake Michigan, south of Chicago, to build a steel plant, and a city called Gary for the housing of its hands. By the end of 1912 there were over thirty thousand people in Gary. But the plan for it was made, not chiefly for the good of the citizens, and contains nothing of special value.

On the other hand, Letchworth, a "Garden City" of England, built on land owned by a company which intends, not to make money, but to keep the healthfulness and beauty of the country along with the conveniences and social opportunities of a city, has many wonderfully interesting features and has been imitated both in England and America.

It will be seen that *city planning* means such forethought on the part of the people of the city as a whole as will prevent haphazard city building by individuals and will, therefore, cause the city to become as convenient, healthful, and beautiful as men know how to make it. No two cities can be planned in just the same way, for there are always differences in climate, position, surface, occupations and character of the people. And each city will have its own way of planning. But there are now a number of people devoting themselves to study of cities, so that it is possible to get experts, able to study the particular conditions of each place and its special needs, and to give advice as to how best to meet them.

A City Survey and a City Plan.

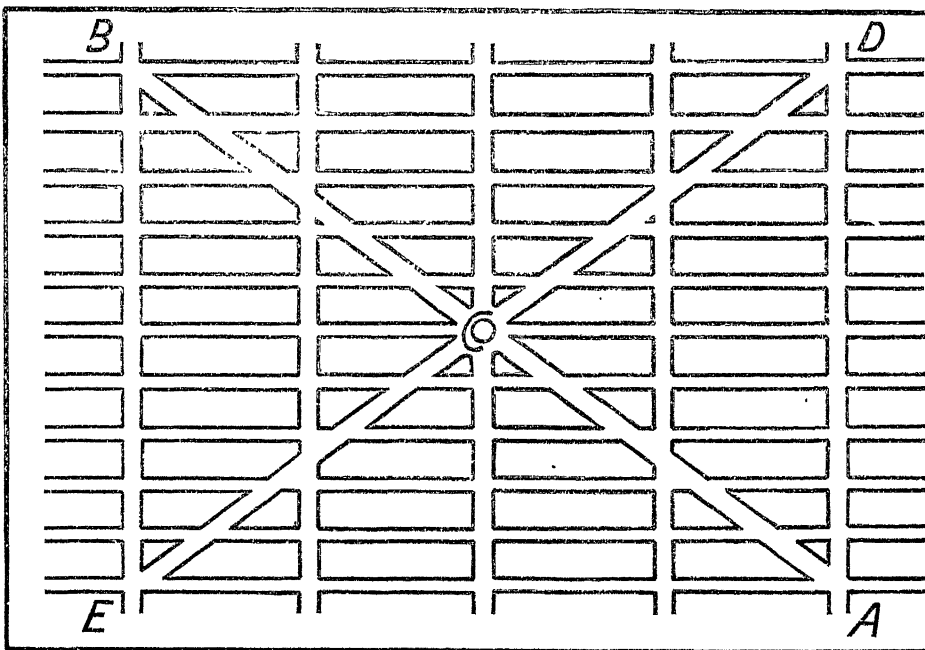
The study these experts make is called a City Survey, and the advice they give is called a City Plan.

Progressive cities, both large and small, are having such surveys and plans made.

In June 1911, a City Plan Commission of nine men was appointed by the Mayor of Newark. It published, in December 1913, a report which is full of interest to those who live here. It tells why Newark is a good place to live in, and how it could be made better. In separate chapters it discusses the system of streets, the decoration of the city, the improvement of the harbour to increase Newark's trade, public markets, the trolley system, the Morris Canal, and the opportunities in Newark for play and recreation.

Streets.

The cleverest thing that L'Enfant did in the Washington plan was to lay out diagonal avenues which give short routes between important places



When a city builds its streets after the rectangular plan, i. e., at right angles to each other, as in the above map, it should also plan for a system of diagonal streets, such as

A, B, and D, E, for these give easy access from any part of the city to any other. This is not possible without the diagonal streets.

There would be many ways to go from A to B or from D to E were there only the checkerboard streets; but the diagonals provide the shortest ways. Moreover, a little park at the centre C, with a statue, or fountain, or monument at C, can be seen from eight different directions. There are many small parks in Washington at such spots, containing often fountains or statues.

The city has the right to "condemn" land, that is, take possession of it and pay for it whether the owner wishes or not—(*but only as much land as it requires*) to build needed streets or make needed parks, or put up city buildings. In Europe and in some states in this country, Massachusetts and New York, for example, cities have the right of "excess condemnation." That is, the city can thus take not only the land for a street or park, but more land near it. When the park or the new street is made, the city sells the extra land at much higher prices, for the making of the improvement has increased the value of this adjoining land. Sometimes the entire cost of a new street or park is thus paid for, and no tax money is needed.

London recently cut through its most closely built section a great highway called the Kingsway, destroying a mass of buildings valued at twenty-five million dollars, but because of excess condemnation, there was no expense to the taxpayers.

When a street has been made too narrow for the traffic that has to pass through it, it is possible to widen it slowly by fixing a building line inside the present one, allowing no new building to go beyond that line and causing all buildings to be retired to the new line by a given date. In Washington, when they wish to be sure that a street will be wide enough for a much greater traffic than it now has, but do not wish to undergo the expense of keeping up a wide pavement, they let the owners of

lots facing the street use the margins of the street in front of the respective lots in any way they please except to build on, with the understanding that this land is to be given up when needed. Residents generally use this land for lawns : storekeepers often pave it up to their doors.

Housing.

In Newark, as in most cities, there are rules about the kinds of houses, stores and factories, etc., that people may build. Within the fire limits of the city there may be no new frame structures. On each street there is a "building line," beyond which houses may not project. Windows in rooms, plumbing, space between houses, width of halls in tenements, fire escapes and doors that lock in factories, the relation of the height of buildings to the width of streets, and many other such matters are, in many places, controlled by the city government. In some German cities there are regions, or "zones," marked out for homes in which no factory may be built, and other zones dedicated to business houses. Thus when one buys he knows what sort of neighbourhood he is to be in, and stores cannot encroach on residence streets as often happens in America. In Letchworth, when land is sold it is stipulated that only so many houses per acre shall be built on it. Thus even the poor are assured breathing space for all time.

Sanitation.

One of the most important things for city planners to look out for is the health of the people. But this is a matter with which every other subject has to do. Wide streets give breathing room ; trees promote health ; proper houses and plumbing and water prevent sickness ; crowded street cars produce contagion. Even beauty in the city causes happy feelings, which quicken heart-beats and improve circulation !



Sanitation in Bengal.

THE Government Resolution on the Sanitary and Vaccination Reports starts by saying that "the year under review was decidedly more unhealthy than the preceding year". The reason assigned is that, except in Dacca, the total rainfall of the year was below normal throughout the province. The birth rate was more or less stationary during the last two years, while the death rate rose from 29.38 to 31.57, calculated on the basis of the census figures. The increase in mortality which was chiefly under the head 'fever' reduced the excess of births over deaths by nearly 50 per cent; the large increase of mortality from fever is attributed to early cessation of the rains. The deficient rainfall affected the agricultural outturn and thus precluded the possibility of any fall in the price of good grains. Infantile mortality was high in several districts and the total death rate increased from 20.95 to 22.14 per cent. of the births.

Anti-malarial measures were carried out in a few towns and quinine was freely distributed in a number of districts, though, owing to the withdrawal of several sub-assistant surgeons for military duty, the anti-malarial operations received a temporary check.

The first step towards the elimination of malaria is the extensive use of quinine both as a prophylactic and as a curative medicine, and it is gratifying to observe that the efforts of the Malaria Committee to popularise quinine appear to be meeting with success: there is a considerable demand for quinine in the "treatment" form in which it is now sold. The sale of quinine in this form has nearly doubled since August 1913. The necessity for administering adequate doses of quinine to patients attending dispensaries was brought to the notice of District Boards and Municipalities, and assistance was given to a few of the poorer municipalities to enable them to purchase the requisite amount of quinine.

The Malarial Committee decided that no benefit would accrue from jungle-cutting experiments for which the Indian Research Fund had made a grant of Rs. 50,000 ; the grant was accordingly withdrawn.

There was a slight increase in the number of deaths from cholera, the death rate being 1·96 per mille ; mortality from plague continued to decrease.

The total cost of sanitary works executed during 1913-14 by Government, Municipalities, District Boards and private individuals amount to Rs. 17,28,946 against Rs. 13,17,368 during the previous year. Municipal expenditure on sanitation during 1913-14 increased under all important heads, the total increase amounting to Rs. 556,637. This increase was principally due to capital expenditure on water supply and drainage, while there was also a considerable rise in the amount spent on conservancy. Steps were taken to improve village sanitation in several districts by clearing out impure tanks, by cutting down jungle, and by improving drainage.

The Government draw attention to the value of private effort in the improvement of the sanitary conditions of rural areas, and they refer to the reforms that have been effected in certain villages in the district of Hooghly by Babu Sarada Charan Mitra, Retired Judge of the High Court.

The Sanitary Board held nine meetings during the year and did much useful work. A recommendation that Government should delegate financial authority to the board was not accepted. A new feature regarding the constitution of the Board is that non-official members were added to it at the end of 1913 ; Government acknowledge the useful services rendered by them to the Board. The Sanitary Engineer's department was re-organised and formed into two divisions—water supply and drainage—each under the charge of an Assistant Sanitary Engineer.

Travelling Dispensaries in the United Provinces.*

THE Report on plague administration and the working of travelling dispensaries in the United Provinces for the year ending 30th June 1915 has been published. Some important changes were made in the number and constitution of the travelling dispensaries during the past year. Government have sanctioned the existence of 94 travelling dispensaries in all. Of these, 47 are permanently attached to districts, one being posted to each district in the provinces, except Garhwal. Each district board contributes Rs. 1,000 per annum towards the cost of the upkeep of the dispensary, Government bearing the rest of the cost. The travelling dispensary in each district is under the control of the Civil Surgeon. Out of the remaining 47 travelling dispensaries sanctioned by Government it has up to the present only been possible to open 40 owing to the shortage in the number of sub-assistant surgeons available. Of these 40 dispensaries one has been placed at the disposal of the Divisional Forest Officer, Almora, to accompany his camp on his tours, while the remaining 39 are divided into circles as follows :—

<i>Circle A.</i> —Meerut	...	5
<i>Circle B.</i> —Bareilly	...	4
<i>Circle C.</i> —Aligarh	...	4
<i>Circle D.</i> —Benares	...	7
<i>Circle E.</i> —Gorakhpur	...	7
<i>Circle F.</i> —Fyzabad	..	5
<i>Circle G.</i> —Lucknow	...	4
<i>Circle H.</i> —Allahabad	...	3
		39

While the abovementioned dispensaries normally work in the circles given above, their distribution is entirely at the

* From the Official Report.

discretion of the Inspector-General of Civil Hospitals, and he transfers them to any places where their services are specially required in connection with outbreaks of epidemic diseases, famine, &c.

During the past cold weather a considerable number of these dispensaries were concentrated in the eastern districts owing to the prevalence of plague. Several were concentrated at Hardwar for Kumbh *mela* duty, and during the past hot weather several were concentrated in the hills and in the Budaun district in connection with outbreaks of cholera and relapsing fever. Owing to the absence of supervising Indian Medical Service officers the provincial travelling dispensaries are all at present controlled by the Civil Surgeons of the districts to which they may happen to be temporarily attached.

The distinction which was formerly observed between the two kinds of travelling dispensaries, viz., "Plague" and "Malarial," has been abolished.

It may now be confidently said that the travelling dispensaries have won the confidence of the people and that they are of much benefit in bringing medical aid to outlying villages. They have also proved of the utmost service in rendering medical assistance during epidemics. As a rule travelling dispensaries are posted to parts of districts distant from permanent branch dispensaries.

The following table shows the number of patients treated in travelling dispensaries for certain important diseases :—

Important diseases.				1913-14.	1914-15.
Cholera	...	...	...	2,334	2,816
Malaria	...	...	...	60,726	68,488
Plague	...	...	...	6,593	3,181
Diseases of the nervous system.				21,211	22,554
Ditto of the eye...	...	...	...	80,387	75,299
Ditto of the ear	...	...	...	23,093	28,590
Ditto of the nose	...	...	...	3,682	3,951

All other diseases of the digestive				
system	...	...	45,497	53,510
Hydrocele	...	...	1,092	1,340
Diseases of the skin	...	...	143,818	141,475
Poisoning	...	...	600	678

CHOLERA.—The travelling dispensaries have proved a valuable agency in combating this disease. Twelve travelling dispensaries were temporarily transferred to other districts for cholera duty.

MALARIA.—There were in all 68,488 cases treated and 293 lbs. of quinine in tablet form distributed. Last year 60,726 malarial patients were treated.

RELAPSING FEVER.—Relapsing fever prevailed in the western part of Moradabad district and sub-assistant surgeons were deputed to inspect villages. Two travelling dispensaries, one from Ballia and the other from Bareilly, were sent for relapsing fever duty to the Budaun district. Printed pamphlets on relapsing fever, in which great stress was laid on the necessity for the destruction of lice, body cleanliness, &c., were distributed in infected villages. The castes principally attacked were chamars, sweepers, and poor Muhammadans, and the epidemic was absolutely confined to the poorer classes. In Bareilly district 282 cases were treated, out of which 216 cases recovered, 16 died, and the result in 50 cases is not known.

The total number of patients treated was 966,707 (new and old, both) against 920,316 last year.

EQUIPMENT.—A revised list showing the details of the equipment supplied to each travelling dispensary is attached to this report.

EDUCATIONAL WORK.—Pamphlets relating to plague malaria, cholera, small-pox, and tuberculosis have been freely distributed to literate persons.

List of the authorised drugs and instruments and other equipment for use of the sub-assistant surgeon in charge of travelling dispensaries.

- Tentage.*
 1 double-fly, officer's 8 lb.
 light field-service tent
 without bathroom .. 10' x 8'
 1 pal 8' x 8' for khalasi.

- Furniture.*
 1 camp table.
 1 chair.

Medical and surgical equipment.

- 2 wooden boxes for medicines
 and equipment, A and B.
 1 complete inoculation outfit.
 1 surgical haversack.
 1 leather handbag for medi-
 cines.

*European drugs, &c., accord-
 ing to the following list.—*

Tablet.

- | | | |
|--------------------------|--------|----|
| Quinine sulphate | .. gr. | 3 |
| Acid asceto-salicylate | .. " | 5 |
| Boric acid | .. " | 5 |
| Ammonium carbonate | .. " | 5 |
| Pulv. hydrarg. cum creta | .. " | 2 |
| Pulv. ipecac. Co. | .. " | 10 |
| Santonin | .. " | 2 |

Tablet special tonic

- | | | |
|---------------------------|--------|---|
| R/Ext. cascarae sagradae | .. gr. | ½ |
| Ext. gentianae | .. " | ½ |
| Ferri et ammonii citratis | .. " | 3 |
| Quinine sulphatis | .. " | 1 |
| Sugar-coated, yellow | .. " | 5 |

Plague stimulant.

- | | | |
|------------------------|------|---------|
| R/Pulv. digitalis | .. " | 1 |
| Strychninae phosphatis | .. " | ½ gr. 2 |

Pills.

- | | | |
|--|-------|---|
| Aloe et ferri | .. " | 5 |
| Camphora, opii, capsici,
asafoetida, piperis | .. aa | ½ |
| Calomel. colocynthidis,
rhei | .. aa | 2 |
| Opii | .. " | 1 |
| Scillae comp. | .. " | 5 |
| Parke Davis & Co's entire
coated potassium permanga-
nate pills for cholera
(Roger's) | .. " | 2 |

- Castor oil.
 Carbolic acid.
 Tincture and liniment of
 iodine, equal parts.
 Tincture of iodine.
 Borox-iodoform.
 Vaseline.
 Magnesium sulphate.
 Silver nitrate (in sticks).
 Cocaine hydrochloride.

- Chloroform, in hermetically
 sealed capsules.
 Potassium permanganate.
 Rectified spirit.
 Unguentum hydrarg. oxid. flavi
 Unguentum hydrarg. nitratis.
 " sulphuris.
 " zinci oxid.
 " acidi borici.

Tablets hypodermic.

- | | |
|--------------------------|------------|
| Atrophine sulph. | gr. 1/180. |
| morphine sulph. | .. gr. 1/6 |
| Morphine sulphas | .. " ½ |
| Digitalin | .. 1/100 |
| Strychnine hydrochloride | .. 1/60 |

BAZAAR MEDICINES.

Camphorated oil.

- | | |
|-----------|----------|
| Camphor | .. 1 oz. |
| Sweet oil | .. 4 " |

Powder for piles.

- | | |
|--------------------------|-----------|
| Sublimed sulphur | .. 10 gr. |
| Acid tartarate of potash | .. 10 " |

Rhubarb powder.

- | | |
|---------------------|-----------|
| Bicarbonate of soda | .. 10 gr. |
| Rhubarb | .. 5 " |
| Ginger | .. 10 " |

Powder for rheumatism.

- | | |
|---------------------|-----------|
| Sublimed sulphur | .. 10 gr. |
| Bicarbonate of soda | .. 10 " |
| Colchicum powder | .. 1 " |

Powder for dyspepsia.

- | | |
|---------------|-----------|
| Ginger powder | .. 10 gr. |
| Aniseed | .. " |
| Kacheri | .. " |

- | | |
|-------------|------|
| Small hur. | .. " |
| Black salt. | .. " |

- | | |
|--------|-------------|
| Lahori | .. aa 5 gr. |
|--------|-------------|

Powder for gonorrhoea.

- | | |
|----------------------|------------|
| Cubeb powder | .. 10 gr. |
| Bicarbonate of soda. | .. " |
| Bitartrate of potash | .. aa 10 " |

Powder for dysentery.

- | | |
|-----------------|--------------|
| Aniseed powder. | .. " |
| Esaphgul. | .. " |
| Sugar | .. aa 10 gr. |

Cough pills.

- | | |
|---------------------|-------------|
| Pulv. kakra singhi. | .. " |
| .. piplanul. | .. " |
| Lahori salt. | .. " |
| Acacia gum | .. aa 1 gr. |

Spleen powder.

- | | |
|------------------|-----------|
| Ginger powder | .. 10 gr. |
| Rhubarb | .. 5 " |
| Sulphate of iron | .. 2 " |
| Quinine | .. 2 " |

<i>Instruments, dressing, and other accessories.</i>	
1 surgical pocket dressing-case, special pattern, containing—	1 enamelled iron instrument tray.
Scalpel-bistoury, dissecting forceps	2 „ „ basin large, 16" diameter.
scissors, 2 Spencer Wells artery forceps, director with spoon, probe, needle, ligatures, and dressing forceps.	1 enamelled iron basin small, 10"
1 catheter, German silver, male and female combined.	1 leather cover to hold large basin 16" diameter, soap case, nail brush, and towel.
2 India-rubber soft catheters, sizes 5 and 9.	1 clinical thermometer.
1 tooth forceps case containing 4 forceps and 1 gum lancet.	1 tin soap box.
1 tooth forceps lower molar, hawk-bill.	1 nail brush.
1 cilia forceps.	2 towels.
1 ear syringe, all metal.	1 adhesive plaster (Johnson's).
1 syringe, glass urethral.	Lint, absorbent, in 2-oz. packets
1 hypodermic syringe in case.	Wool, double cyanide, antiseptic.
1 spatula, German silver.	„ absorbent in 2-oz. packets.
1 „ bolus.	Gauze, double cyanide, antiseptic.
1 set trocars and cannula (ascites).	Label, blank, gummed.
1 Higginson's enema syringe with spare nozzle.	Stoppered bottles, square .. 1 oz.
Measure glass.	„ „ „ „ 2 „
1 slab wedgwood.	1 „ „ „ sheet. „ 4 „
2 dredgers, tin, for dusting powders.	C. „ „ in large .. 4
1 Kidney-shaped dressing tray, enamelled iron.	„ „ „ small .. 16
	Square tin .. 6
	Belts and badge for khulasis.
	Cataract spectacles of the strength required.
	Brass scales with weights in a wooden box .. 1
	Snakebite lancet .. 1
	Minim measure, 2 drs. size.. 1

The Bombay Corporation.

[By R. N. AINGAR, BARRISTER-AT-LAW.]

A QUESTION OF ORDER—arising out of the proceedings at a Meeting of the Bombay Corporation held on 25th October, 1915.

At a Meeting, a proposition is moved and seconded. Discussion follows. Two amendments are proposed and seconded. The mover of the original proposition replies. The second amendment is put to the Meeting and lost.

Then the first amendment is put to the Meeting and lost. A poll is demanded. Meanwhile some new members come in. *Quære*—Whether these new arrivals can vote on the division?

1. According to the rules of Parliamentary procedure they cannot. "In both houses any member who desires to vote is required to be present in the house when the question is put from the chair the first or the second time. If not within the folding doors of the house when the question is put from

the chair, he is not entitled to vote." (Law and usage of Parliament by Sir T. Erskine May, 11th edn. page 354.)

2. But it would seem that this rule of Parliamentary practice which is closely dependant on the other rule which makes it incumbent upon every member to vote one way or other if he is present in the house at the division, does not invariably obtain outside the house

3. So it is pointed out that "A poll is in the nature of an appeal by one of the contending parties dissatisfied with the decision of the Chairman upon a show of hands. When a poll is demanded, the previous proceedings so far as the voting is concerned become abandoned and a nullity. The real voting begins with the commencement of the poll... It seems that a member who was not present at the voting at the conclusion of which "poll was demanded is not precluded by such absence from attending and voting at the subsequent poll which is a mere enlargement of the meeting at which it was demanded." (Halsbury's Laws of England, Vol. VIII. para. 785.)

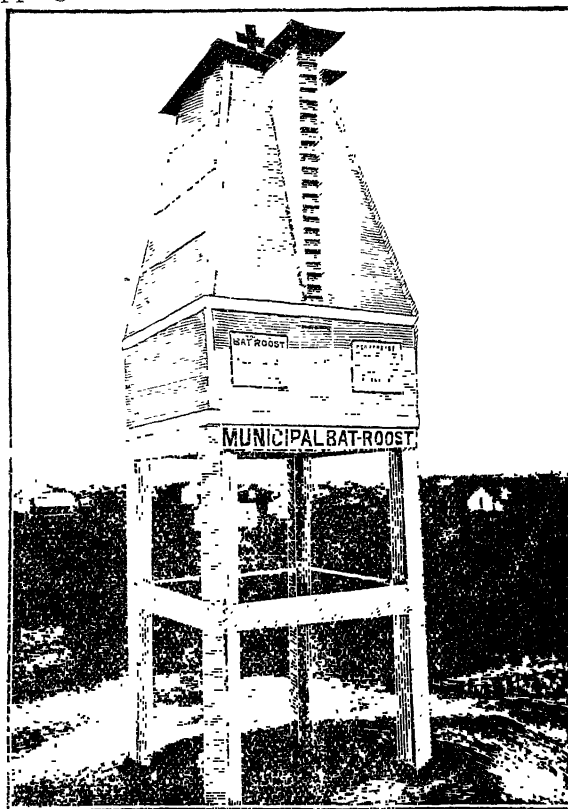
Public Health and Sanitation.

A Municipal Bat-Roost.

THE only Municipal bat-roost in the world was recently erected at San Antonio, Texas, and is expected to play an important part in the city's fight against malaria and other diseases. Dr. C. A. Campbell of San Antonio declares the bat to be one of the greatest enemies of the mosquito, which is largely responsible for the spread of malarial and other germs. For this reason San Antonio is not only protecting the bat by law, but has entered into the proposition of its cultivation.

Dr. Campbell is authority for the statement that the year toll in America to malaria is conservatively \$ 100,000,000. He has also demonstrated that a single bat will consume as many as 260 mosquitoes in one night, and as it requires seven days for the cycle of evolution to complete itself in a mosquito that has bitten an infected person, before it can transmit the

disease to another, it will be seen that in regions where many bats are flying all night, the chances of catching the mosquito and stopping the infection are very large.



Aside from the hygienic principles involved there is also an economic feature to this proposition. Bats not only catch and eat the malarial mosquito, but convert the insoluble parts of its body into guano, which is one of the highest of all fertilisers. If a bat catches only 250 mosquitoes in one night, its droppings from this meal would weigh about $2\frac{1}{4}$ grains. At this rate 250,000 of the creatures, which is the number capable of being housed by the San Antonio roost would produce about 95 pounds of guano in one night, or something like 12 tons in a season of nine months—and guano is worth \$40 a ton.

It is Dr. Campbell's idea that the bat roost is a natural hygienic measure which should be adopted by Governments, Municipalities, or Corporations controlling large bodies of land, and who are financially able to erect enough of the roosts

to protect their tenants. The roosts, however, must be constructed from a scientific standpoint so that they will not only attract bats, but induce them to live there permanently.

Water Supply.

Rules for working Settling Tanks and Slow Sand and Mechanical Filters in Water-Works.

The following rules have been framed by Government for the guidance of the Howrah Municipality and will be found useful to all Water Engineers.

SETTLING TANKS.

1. It is important that the water drawn from rivers, channels or streams should have as long a settlement as possible before being passed on to slow sand filters, in order that the action of sunlight, the precipitation of suspended matter and the natural tendency to elimination of pathogenic bacteria may have their maximum purifying effect.

2. Settling tanks are worked either on (a) the continuous flow, or (b) the intermittent system. In the first system the tanks are kept full, and the water is continually admitted at one end and drawn off from near the surface at the other. In order that this system may be properly used with slow sand filters, the unfiltered water-pumps must be worked continuously throughout the 24 hours, or the settling tanks must be fed from a storage reservoir. When designed on the intermittent system, each tank in turn is filled and then kept full until the tanks filled before it are drawn down: the settled water is then decanted through a floating arm or similar apparatus until the tank is lowered to the lowest draw-off level when it is again filled.

The whole available storage capacity of settling tanks should always be used as far as possible. On the other hand, care must be taken, in tanks unprovided with fixed overflows, not to fill them to a greater depth than they are designed for.

3. When a deposit of from 18 inches to 2 feet of silt has formed at the bottom, the tank should be emptied and cleaned out. This work must always be done in the dry weather and preferably between February and April.

4. In the rains and when there is an excessive amount of suspended matter in the raw water, clarification will generally have to be assisted by the use of a coagulant. The precipitant

most commonly used in Bengal water-works is aluminoferric. This depends for its effective action upon the alkalinity of the water. If more of the chemical is used than can be decomposed by the carbonates present, it will remain dissolved in the water and will be wasted.

Generally speaking, not more than 2 grains per gallon of aluminoferric should be used. Before deciding on the quantity to be added, a sample of the water to be treated should be sent to the Sanitary Commissioner for analysis and advice on this point.

5. The aluminoferric must be added at the inlet end of the settling tanks, and experiments should be made to ascertain the time taken by a given quantity to dissolve. One grain per gallon is 1 lb. per 7,000 gallons treated. Thus, if 300,000 gallons per day are treated with 2 grains per gallon, the daily quantity used will be 86 lbs.

SLOW SAND FILTERS.

6. The rate of delivery on to a sand filter is regulated by (a) the available head between the settling tanks and the inlet valve, and (b) the amount the inlet valve is open.

The rate of flow through the filter depends upon (c) the resistance of the sand in the filter, and (d) the filtration head or difference in level between the surface of water on the filter-bed and the water in the outlet well.

The discharge from the outlet well to the clear-water reservoir depends on (e) the amount the outlet valve is open, or in the case of a telescopic outlet, the extent to which the bell mouth is lowered.

It is obvious that these factors are mutually interdependent, for more water cannot flow out of a filter than is delivered on to it, nor than can make its way through the sand.

Factors (a) and (c) continually tend to vary, so (b) and (e) must also be altered from time to time in order to maintain a constant flow through the filter. In some filters the inlet is controlled by a ball valve which keeps the level of the water on the filter always the same. In this case, the flow through the filter is regulated by (c). In all filters the surface of the water on the sand should be always kept as nearly the same level as possible and the filtration head regulated by the outlet valve or telescopic weir.

The depth of water on the sand should be somewhere between 2 feet and 3 feet 6 inches. Gauges measuring to the same datum should be fixed on the wall of the filter and in the outlet well so that the difference in level can be easily measured.

7. Filtration should be carried on continuously day and night as nearly as possible at the same rate, usually somewhere between 3 or 4 inches vertical an hour. The rate of flow must on no account exceed the latter figure.

Where there is no direct method of measuring the flow of water through a filter, such as an outlet gauge notch or a meter, it may be ascertained by closing the inlet valve and leaving the outlet valve open. The fall of the surface of the water in inches at the end of an hour will give the rate of flow per hour.

8. In a new filter or one recently scraped, the filtration head required will be very small, but it will rapidly increase. In the usual way, a filter should be scraped before the filtration head reaches 12 inches. It must never be allowed to exceed 15 inches.

9. A filter should be scraped by carefully removing the slimy ooze which has formed on the top, together with about $\frac{1}{4}$ inch of sand. The sand removed may subsequently be used again if properly washed in a sand washer. The depth of fine sand must never be reduced to less than 18 inches, and when this thickness is reached, the filter must be replenished. Before replenishing about 2 or 3 inches of sand should be removed, and the remainder dug over and loosened; clean-washed sand is then to be added until the original thickness is obtained.

10. If the water filtered has been of a very bad quality or the filter has been mismanaged, or been long in use, the whole filter may require to be renewed. In this case, the whole of the filtering material, coarse sand and gravel, as well as the under-drains, must be removed and washed before replacing.

11. After a filter-bed has been scraped, replenished, or renewed, it should, if possible, be charged from below by admitting filtered water very slowly until the surface is about 3 inches above the sand; the filling can then be completed from above. If there is no arrangement for filling from below, the filling must be very carefully and slowly done from above.

After filling, water should be passed through the filter at the rate of about one inch vertical per hour and run to waste for 24 hours after scraping and four days after replenishing or renewing.

12. Daily records must be kept in the filter-bed log-book [Sanitary Engineer's Form 5 (Appendix A)] of the quantity of water filtered and the filtration head, recorded at intervals of three hours throughout the day.

MECHANICAL FILTERS.

13. For each installation of mechanical filters, rules for working must be obtained from the makers of the plant, but the following points must be attended to in all cases :—

- (i) The efficiency of the plant depends upon the proper proportioning and correct addition of the coagulant. The actual amount of coagulant required is determined by local conditions. It will vary during different seasons of the year and can be best ascertained by experiment in actual working.
- (ii) The precipitant generally used is sulphate of alumina and this should be purchased under a proper specification of chemical composition. The precipitant is made up into a strong solution in large vats and added to the raw water by an adjustable apparatus. The water so treated is then allowed to settle for some hours before filtration.

In cases where sedimentation continues for a considerable time after the coagulant has been applied, it may be necessary to add a small additional quantity of the chemical to the water immediately before passing it to the filters.

- (iii) The rate of filtration should be kept as nearly as possible constant and must not exceed the rate for which the filters had been designed. Generally, filters are provided with automatic controllers, and these must on no account be tampered with or made to pass more water than intended.
- (iv) The maximum filtration head permissible varies with different types of plant; it is usually not more than 10 feet. When the maximum head is reached, as shown by the indicator, the filter must be washed.

- (v) Washing must always be done with filtered water. In the case of a battery of two or more pressure filters, they may be arranged so that one can be washed with filtered water from another.

Washing must be continued until the waste water becomes quite clear. After washing, the filtered water must be run to waste for 20 minutes before connecting to the town.

- (vi) Daily records must be kept in the filter log-book [Sanitary Engineer's Form 5 A (Appendix A)] of the quantity of water filtered, the amount of sulphate of alumina used, the hours during which filtration has been carried on, the filtration head (recorded at intervals of three hours), the length of time taken to wash each filter, and the hour at which it was washed.

Government Orders & Notifications.

[Madras.]

Constitution of Village Panchayats.

IN chapter XVIII of their report, the Royal Commission on Decentralization advocated the constitution of panchayats for the administration of the local affairs of villages in India. In so doing their main object was to effect decentralization and at the same time to associate the people with the administration. While they seem to have inclined to the view that their proposals were in the nature of a revival of ancient institutions, they recognized that the introduction of such a system as they recommended must be gradual and tentative, that it must be adapted to suit local conditions, that its development would require great care, discretion and patience and that its success would depend on the guidance of sympathetic district officers. They were of opinion that as a rule there should be one panchayat for each village, that its member should be informally elected and that the village headman should be the chairman *ex-officio* if he was competent. They proposed that the panchayats should be given civil and criminal jurisdiction in petty cases and should be entrusted with expenditure on minor local works, such as wells, roads, schools, markets and conservancy. They deprecated the association of the system with any new form of taxation and recommended that the

village fund should be constituted from assignments of land-cess, receipts from markets, etc., fees in civil suits and grants by Local Boards. They were not in favour of subordinating village panchayats to District or Taluk Boards but advocated the abolition of the existing local fund union panchayats and their replacement by the proposed village panchayats or, in villages of a more urban character, by a kind of embryonic municipal council or town panchayat.

2. In referring the recommendations of the Royal Commission to local Governments in 1910, the Government of India agreed that it was desirable to make a cautious attempt to introduce the panchayat system under the supervision of the district authorities in villages where circumstances were favourable; but they inclined to the opinion that five or six villages should as a rule be grouped under one panchayat composed of the several headmen, in order to neutralize animosities arising from village factions and the consequent risks of oppression, especially in the exercise of judicial functions. They agreed that the trial of petty civil and criminal cases should form one of the most important functions of the panchayats, but recommended caution in altering the existing system (under which judicial powers were exercised by the village headman sitting alone) in districts where that system had been successful. In most other respects they supported the proposals of the Commission, but they were not in favour of the abolition of existing local fund unions and did not object to some power of permissive taxation for local purposes being conferred on village panchayats.

3. In their final resolution issued in 1915 on a review of the replies of the local Governments, the Government of India have observed as follows:—

38. The Commission recognized that any policy of establishing Panchayats. panchayats would be the work of many years, would require great care and discretion, and much patience and judicious discrimination between the circumstances of

different villages. The Government of India desire that where any practical scheme can be worked out in co-operation with the people concerned, full experiment should be made on lines approved by the local Government or Administration concerned. Throughout the greater part of India the word "panchayat" is familiar. The lower castes commonly have voluntarily constituted panchayats, to whom they allow quasi-judicial authority in social matters. The more artificial administrative committees, such as chaukidari panchayats, local fund unions, and village sanitation and education committees, and, in places even village panchayats, already exist. The spread of co-operative societies and the distribution of Government advances in times of famine and scarcity on joint security are educative influences. Village tribunals for the disposal of petty civil suits have got beyond the experimental stage in some places and are in the experimental stage in others. There is, therefore, some material with which to build. The Government of India agree, however, with the view prominently brought forward by the Bengal District Administration Committee that much will depend on the local knowledge and personality of the officers who may be selected to introduce any scheme.

39. With this general commendation the Government of India are content to leave the matter in the hands of local Governments and Administrations. They are disposed to consider that the following general principles indicate the lines on which advance is most likely to be successful :—

(1) The experiments should be made in selected villages or areas larger than a village, where the people in general agree.

(2) Legislation, where necessary, should be permissive and general. The powers and duties of panchayats, whether administrative or judicial, need not and, indeed, should not be identical in every village.

(3) In areas where it is considered desirable to confer judicial as well as administrative functions upon panchayats the same body should exercise both functions.

(4) Existing village administrative committees, such as village sanitation and education committees, should be merged in the village panchayats where these are established.

(5) The jurisdiction of panchayats in judicial cases should ordinarily be permissive, but in order to provide inducement to litigants reasonable facilities might be allowed to persons wishing to have their cases decided by panchayats. For instance, court-fees, if levied, should be small, technicalities in procedure should be avoided and possibly speedier execution of decrees permitted.

(6) Powers of permissive taxation may be conferred on panchayats, where desired, subject to the control of the local Government or Administration, but the development of the panchayat system should not be prejudiced by an excessive association with taxation.

(7) The relations of panchayats on the administrative side with other administrative bodies should be clearly defined. If they are financed by district or sub-district boards, there can be no objection to some supervision by such boards.

4. His Excellency the Governor in Council has given his most careful attention to the views expressed on this subject by the Royal Commission and by the Government of India. As observed by both authorities, chapter V of the Madras Local Boards Act provides, so far as this Presidency is concerned, for the constitution of village panchayats (called in the Act " Union Panchayats ") and for entrusting them with certain functions and duties. These functions and duties are specified in section 141 of the Act and include :—

- (1) the lighting of public roads ;
- (2) the cleansing of public roads, drains, tanks, wells, and, other public places ;
- (3) the establishment and maintenance of hospitals, dispensaries and schools ;
- (4) the making and repair of roads and drains,
- (5) the construction and repair of tanks, wells and other works connected with water-supply ; and
- (6) any other works necessary for the preservation of public health.

It appears to His Excellency the Governor in Council that the sphere of action prescribed by this section is sufficiently

wide and varied and covers most of the objects of primary importance to the well-being of villages. The Government are not prepared to accept the view of the Royal Commission that the panchayats created under the Local Boards Act should be abolished. Nearly four hundred panchayats have been constituted under the Local Boards Act and to abolish them would be to throw away the work of the last thirty years. On the other hand, the Government consider that there is room for a considerable extension of the existing system. The fact that the working of the panchayats constituted under the Local Boards Act has not given entire satisfaction in the past, has been due to causes which it should be possible to avoid in future. It has often been the practice to club together two or more villages, with the object of augmenting the revenue of the union. When distinct and scattered villages are thus comprised in a single union, there is a tendency for the more important village of the group to obtain an undue share of attention at the expense of the other villages, with the result that the latter receive no adequate return for the taxes they pay and are naturally dissatisfied. Moreover a group of two or more distinct villages has necessarily an artificial character and usually lacks the solidarity of interest which forms the most natural basis for corporate life. In the absence of special reasons to the contrary, it is desirable that an union under the Act should consist of a single revenue village with its appurtenant hamlets. It has also been represented that in too many instances the cost of office establishment and of providing an office building has swallowed up a large proportion of the funds derived from the union. The Government consider it unnecessary to insist upon an union panchayat providing or renting a separate building for their office. The panchayat can hold their meetings at the village school or chavadi or in the house of the village headman or in any other suitable building. It is not essential that they should entertain a separate office establishment. A panchayat may find it possible to engage the services of the local schoolmaster,

postmaster, karnam or so forth for the purpose of recording their proceedings and doing their other clerical work. The collection of taxes may also be entrusted by them to full-time or half-time servants or to any other agency they may prefer, on such terms as they may find convenient. The village officers might perhaps be entrusted with the work and remunerated by a percentage of the collections, but this should not be done without the sanction of the divisional officer and the concurrence of the village officials themselves.

5. The unpopularity of some unions may perhaps also be due to their having been too much tied down by restrictions as to the amount of taxes to be levied and the application of the funds raised. Here again, the Governor in Council is prepared, subject to the provisions of the Local Boards Act, to give panchayats a free hand, leaving it to them to raise taxes on any scale they prefer within the limits laid down by the Act and according to their necessities and to apportion the expenditure in any manner they please between the various objects indicated in section 141 of the Act. It may be that in some villages (for example, villages situated in the deltaic tracts of the Kistna and Gôdavâri districts) the making of a village street may be more urgent or popular than any other object. No objection need in such a case be taken by the Taluk Board to the union funds being devoted to this object in preference to others. Ordinarily, it may be presumed that the sanitation of the village, including a supply of pure water for drinking purposes, should, and probably would, be given preference over other requirements. It must of course be understood that the Taluk Board cannot undertake to supply deficiencies caused by the exercise by unions of their right of selection of objects of expenditure. It would not, for instance, be open to them to spend their money on lighting and call upon the Taluk Board to pay the cost of conservancy or of constructing drains. The only ground, however, which would call for active intervention on the part of the Taluk Board would be such mismanagement as led to serious practical evils, as, for instance,

maladministration which resulted in the village becoming the centre of an epidemic outbreak.

6. His Excellency the Governor in Council is also desirous of making the composition of the panchayats more popular by the introduction of a system of informal election. The strength of the panchayats may vary from five to sixteen according to the size and population of the union. The headman of the village would be an *ex-officio* member, but the other members may be selected by the ryots and tax-payers of the village. It is at present neither necessary nor desirable that any elaborate machinery should be brought into existence in the shape of electoral rolls, ballot boxes, appeals, election petitions and the like. All that is necessary is that the President of the Taluk Board should convene a meeting of the ryots and other tax-payers of the village after due notice and personally ascertain in any manner he considers most appropriate the persons whom the meeting wish to elect. The chairman should be selected in the same way. It need hardly be said that the object of the Taluk Board President should be, not to force his own views on the villagers, but merely to ascertain in the simplest and the most effective manner what the wishes of the villagers are and to record them accordingly. In extreme cases, he may reject any person selected by the villagers and appoint another person in his stead or require the villagers to select another person; but in such cases he should record his reasons in writing for adopting this procedure, and his action in this respect will be subject to revision by the President of the District Board, whose decision will be final.

7. It will probably be found desirable in the case of the smaller unions to give a subvention from the taluk board funds to the extent of, say, twenty-five per cent. of the funds raised by the house-tax within the union. These grants should not be earmarked for any specific purpose. Similar aid may be desirable in the case of unions of the same size which are now

in existence. Such subventions should not, however, be ordinarily given to villages with a population of eight thousand or more. Unions of this size may well be regarded as urban rather than rural in character and should be able to raise sufficient funds from their own resources. If in any particular case the need for financial assistance to the smaller unions is likely to impose on any particular District Board a burden greater than the funds of that body can bear, the Government will be prepared to consider the question of making a subvention to the District Board concerned.

8. If the imperfections which have been noticed in the present system of panchayats constituted under chapter V of the Local Boards Act are removed, the Government see no reason why the existing system should not secure more popular approval. They believe that people will acquiesce in the extension of the panchayat system, provided that the proceeds of taxation are devoted to objects of which they themselves approve. Collectors of districts are accordingly requested to examine the circumstances of all revenue villages containing a population of three thousand or upwards and constituting a fairly compact area and to report whether there would be any objection to the constitution of panchayats under the Local Boards Act in these villages; a complete list of such villages should accompany their replies. The Government suggest that it will facilitate the preparation of a reply to this reference if the Presidents of Taluk Boards are instructed to visit personally such villages as are within their jurisdiction, to assemble the leading inhabitants and to explain to them that it is proposed to constitute their villages into a panchayat on the lines indicated above. In submitting their reports, Collectors should state whether the inhabitants of the villages in question are favourable to the proposed constitution of a panchayat and what income (approximately) the panchayat could realize under the provisions of the existing Act. They should give their own opinions and recommendations in each case as to whether an union should or should not be formed.

9. Whilst the Government are thus anxious to extend the operation of the existing provisions of the Local Boards Act in the larger villages, they are prepared also to give a trial to a more indefinite and informal kind of panchayat to be constituted on a voluntary basis and without legislative sanction. These panchayats may be regarded as embryo village unions which may any time develop into local fund union panchayats possessing power of taxation. They would be constituted as a rule for individual revenue villages and would consist of a minimum of five members, subject to increase according to local circumstances. The village headman would be *ex-officio* chairman and the members would be elected by acclamation or show of hands at a general meeting of the village presided over by a tahsildar or divisional officer and would hold office for three years. The divisional officer would have power to remove a panchayatdar found to be corrupt, incompetent or otherwise unfit for office. The panchayat's administrative powers need not be exactly the same in every village, but might vary according to local circumstances. Their main object would be to promote common action for all approved common purposes and might include such objects as—

- (1) the control of village sanitation,
- (2) the enforcement of vaccination,
- (3) the execution of the less important local works,
- (4) the management of cattle-pounds, markets and fairs,
- (5) the construction and maintenance of village school houses,
- (6) the control of tanks, fisheries, cattle-stands, threshing floors and other property belonging to villagers in common,
- (7) the management of turns of irrigation,
- (8) the enforcement of *kudimaramat*,
- (9) the maintenance of fodder and fuel reserves and the management of village forests.

The panchayats thus constituted would be administrative and communal bodies working throughout on a voluntary basis with all possible freedom of adaptation to the local circumstances of each village. They would be subject to the general control of the revenue divisional officer and of the Collector; the Collector would have the power of suspending a panchayat if he considered such a step necessary. Collectors are requested to take action in all districts for the initiation of experiments in the constitution of informal panchayats on these lines. The villages selected for the experiment should be chosen with reference to their homogeneity, the absence of factions, the intelligence of the population and other circumstances calculated to promote the success of the experiment. The result should be watched and reported on through the Board of Revenue.

10. These informal panchayats would not possess any judicial powers or functions. The Government recognise the force of the argument that it is desirable to stop the waste which is involved in allowing petty civil and criminal disputes to be carried to the ordinary district tribunals. As the Government of India have observed, much has already been achieved in the direction of providing for the trial of petty disputes in the village, and the statistics which they quote show that the Madras Presidency is in this respect far ahead of any other province. The Governor in Council has no doubt that there is still a large field for the development of the jurisdiction of village courts; the exact direction in which action to that end should be taken is separately under consideration. For the present, he only desires to direct the attention of the public and of Collectors to the provisions of the Madras Village Panchayat Regulations of 1816, and the Madras Village Courts Act of 1888, which authorize the assembling of panchayats and the convening of village bench courts for the adjudication of particular civil suits on the application of the parties. He desires that district officers should encourage the extension of the operation of these enactments wherever practicable.

11. A subsidiary question, but one of vital importance to the progress of village organization, is that of the improvement of the personality of village headmen. The Royal Commission referred to the corruption of village officers and their alleged under-payment as matters which required the serious attention of Local Governments; the evidence collected on this point shows that in several districts the village headman, on whom must largely depend the success of any system of village panchayats, does not always command the confidence of the villagers. The opinion is commonly expressed that the main cause of such dissatisfaction as exists in regard to the existing village courts is the fact that the method by which the village munsif is selected too often results in the appointment of a man whose qualifications are inferior and who is otherwise unfitted to discharge judicial functions. The Government are inclined to think that, in the majority of districts, divisional officers are unduly hampered in the selection of suitable candidates by the requirements of the present law prescribing rigid adherence to the principle of primogeniture, and the question of amending the law is separately under consideration. It is also urged that men of self-respect are inclined to avoid office, because a village munsif has too many masters to serve, is often subjected to offensive and harassing treatment by petty Government officials, and has many trivial duties to perform which are incompatible with the maintenance of the dignity which should attach to the headman of the village and the chairman of its panchayat. His Excellency the Governor in Council does not consider that any of the duties required of the headman in his capacity as representative of the Government in the village and as the officer responsible for the collection of the revenue need in any way derogate from his prestige; but he fears that there is some truth in the complaint that subordinate officials are apt at times to show lack of due consideration in their treatment of village headmen and to require unnecessary personal services of them. He would impress upon district officers of all ranks

the importance of maintaining the dignity of the village headman in all their relations with him and of avoiding any conduct likely to impair his status and prestige. [G. O. No. 1410 L. dated 2-10-1915.]

Town Planning.

The following press communiqué has been issued :—

1. Census statistics have brought into prominence a movement of the people into the towns in recent years and the consequent failure of the available house accommodation to keep pace with the demands upon it. The inevitable result has been overcrowding and hasty building on unsystematic plans without any eye to the future. The older part of most Municipal towns here is badly laid out and traversed only by narrow and crooked streets, and expensive buildings are arising fast in these which will render improvements very costly if they are deferred. Where fresh building is taking place outside the old centre of the towns, it very usually proceeds on no proper system, houses being huddled together without regard to sanitary principles, the future needs of through traffic, the reservation of open spaces and all the other points which are nowadays rightly held to be essential to the proper growth of a town. It is, however, a hopeful sign that, owing partly to the rapid spread of education and a higher standard of living and partly also to the havoc which the plague has caused in so many towns, a very wide-spread movement in favour of better ideals of civic life is already visible among the upper classes of Indian society which cannot but spread quickly downwards. Municipal councils and local boards are everywhere putting forward proposals for the improvement of towns and villages or the control of their future growth.

2. When the Government of India began in 1908-1909 to help Local Governments with special assignments for promoting sanitation, a very large portion of the funds thus made available was assigned for schemes of town improvement. The impetus thus given to the movement has resulted in quite remarkable developments and a display of real anxiety on the

part of many local bodies to better the conditions of housing, the facilities for traffic, the scarcity of open spaces and the layout and appearance of their towns. The latest offshoot of this spirit is an interest among private individuals, apart from all Government effort in that direction, in co-operative housing and garden suburbs, which promises to bear early fruit.

3. As was however only to be expected, the schemes of improvement born of this movement have not always been wisely designed. Considerable control has been exercised over them by by-laws governing extensions and house building in Municipalities, by the issue of type plans for new extensions and by requiring that all schemes shall pass the scrutiny of the Sanitary Engineer or the Sanitary Commissioner. But the result has not been altogether successful. Useful criticism of schemes of town-planning involves prolonged inspection on the ground and consideration of all the local circumstances, for which the Sanitary Engineer and the Sanitary Commissioner (whose hands have lately had to be strengthened to enable them to carry on their ordinary work) can seldom afford time; points for decision arise which are outside the ordinary purview of the engineer or the sanitarian; and the architectural, artistic, economic and sociological aspects of the problem require to be considered before the improvement of an old town or the formation of a new one can be successfully carried through. The volume of purely town-planning work has, in fact, now grown so largely that to advise upon and guide it successfully needs the whole of the time of an officer trained in the latest schools in such matters. The visit of Professor Patrick Geddes of Edinburgh to this Presidency and his town-planning exhibition, demonstrations and lectures have still more set the educated classes thinking upon such subjects and the need for expert advice is likely to grow rapidly. During the discussion of the Revised Financial Statement in March last, a resolution was moved by the Honourable Rao Bahadur M. Ramachandra Rao Pantulu Garu to make provision for the entertainment of a town-planning officer to advise Municipalities and

local boards on questions relating to town-planning. The Government, moreover, are considering the question of introducing a Town Planning Bill somewhat after the model of the similar enactments in the United Kingdom and Bombay.

4. In view of all these circumstances, and especially of the imperative need for ensuring the proper expenditure of the large grants which have been sanctioned to local bodies for the relief of town-congestion and the formation of new suburbs, His Excellency the Governor in Council considers the employment of a town-planning adviser an urgent necessity. His duties would chiefly be to examine and advise local bodies and the Government upon schemes for the relief of congestion and the formation of extensions and suburbs which have been already, or may hereafter be, suggested. He would also need to help in solving the problems of the housing of the working classes and co-operative house-building and would in addition be expected to undertake a comprehensive study of the requirements of the more important of the rapidly growing towns and lay down the future lines of their growth and development after the manner now commonly adopted in European cities and train up others to carry on the work of town-planning.

5. His Excellency the Governor in Council has been able to secure the services of Mr. H. V. Lanchester, one of the Vice-Presidents of the Royal Institute of British Architects, and Honorary Secretary of the Town-planning Committee of that Institute, who takes great interest in India and the planning of Indian cities and has prepared improvement schemes for the cities of Lashkar, Ujjain and Indore. With the approval of the Government of India and the Secretary of State, Mr. Lanchester has now been engaged as Town-planning adviser for a period of six months.

Status and Duties of Municipal Health Officers.

The rules defining the status and duties of Municipal Health Officers as revised and approved by Government form the appendix to this order. They will be published in the

Fort St. George Gazette and communicated to the Surgeon-General, the Sanitary Commissioner and the Municipal Councils concerned.

2. The Government are considering the desirability or otherwise of permitting Health Officers to engage in private practice. When a decision is come to on the point, rule 4 in the appendix may require modification [G.O. No. 1569 M. dated 29-9-15.]

Appendix.

Rules defining the status and duties of Municipal Health Officers.

1. Health Officers shall be appointed by Chairmen of Municipal Councils from a list of qualified persons maintained by the Sanitary Commissioner. The qualifications required for appointment as Health Officer are noted below:—

First-class Health Officer.—A medical qualification registrable under the British Medical Act and a British Diploma of Public Health.

Second-class Health Officer.—A minimum qualification of L.M.S. degree and a certificate of having undergone the practical training prescribed in G.O. 1108 L., dated 16th June 1914.

In appointing Health Officers of the first-class preference shall, *ceteris paribus*, ordinarily be given to candidates with actual service in the second class. All appointments will be subject to the sanction of Government. Health Officers will be eligible for leave and leave allowances within the limits prescribed in the Civil Service Regulations. Private practitioners appointed to be Health Officers will have no pensionary claims, but will be required to contribute to any provident fund which may exist.

2. The appointments shall ordinarily be on probation for a year except in the case of a candidate who has rendered approved service as Health Officer in some other Municipality. If the Health Officer is ultimately confirmed, the period of probation will count towards increments in salary.

3. The Chairman shall have power to suspend, dismiss or remove a Health Officer or to stop his increment for a specified time, provided that, before passing an order of punishment, the Chairman shall consult the District Medical and Sanitary Officer. A copy of the

order shall forthwith be communicated to the Sanitary Commissioner and the order shall not take effect until confirmed by the Sanitary Commissioner. If the Sanitary Commissioner sees cause to differ from the Chairman's order, he shall report the matter for the orders of Government which shall be final. In the case of orders passed by the Chairman, and accepted by the Sanitary Commissioner, an appeal shall lie to the Municipal Council and a further appeal shall lie to the Governor in Council. No appeal shall be entertained by the Municipal Council unless it is preferred within one month from the date of the order appealed against, exclusive of the time required for obtaining copies. No appeal shall lie to Government against the Council's order unless presented within three months from the date of the order appealed against.

4. Health Officers shall not be permitted to engage in private practice.

5. Health Officers who are subordinates of the medical department lent to Municipal Councils may be granted privilege leave and casual leave by the Chairman, the grant of leave of other descriptions resting with the Surgeon-General. Applications for privilege leave by such Health Officers should before sanction be submitted for remarks to the Surgeon-General. In the case of other Health Officers, the Chairman can grant leave of all kinds; he should communicate his orders to the Sanitary Commissioner.

6. The Health Officer shall be the executive head of the health department of the administration of the Municipality and will deal with all matters relating to the public health of the town. He will be responsible to the Chairman for the efficient management of sanitation, conservancy and vaccination. The entire staff of the health department will work under his orders.

7. The Chairman should ordinarily issue orders to the Health Officer in matters regarding the establishment under the latter's control; if, through emergency or other special cause, he finds it necessary to address a subordinate of the Health Officer direct, he should communicate a copy of his order to the Health Officer.

8. The Health Officer shall exercise general supervision over sanitation and conservancy in the Municipality by daily inspection.

9. The Health Officer's duties shall include the following :—

(i) The administrative charge of infectious disease hospitals, in towns which have a separate hospital. In other towns infectious disease shall be treated by the Medical Officer of the Municipal hospital in sheds attached to the hospital.

(ii) Supervision of vaccination and registration of vital statistics in the Municipality.

(iii) Inspection of all building-sites and scrutiny of plans and applications under the building rules and by-laws for the erection or re-erection of buildings in the town, so far as their sanitary arrangements are concerned.

(iv) Inspection of vacant sites, tanks, pits, low-lying lands, etc., for the purpose of enforcing the sanitary condition and upkeep of such places.

(v) Inspection of all private buildings which appear to him to be insanitary.

(vi) Periodical inspection of insanitary areas with a view to devising measures for their improvement.

(vii) Proposals for the relief of congestion and scrutiny of schemes for the extension of the town in their sanitary aspect.

(viii) Scrutiny of all license applications for markets, cattle-yards, bake-houses, aerated water factories, lodging houses and for carrying on offensive or dangerous trades and transmission of the licenses to the Chairman with remarks and recommendations.

(ix) Periodical inspection of places where dangerous and offensive trades are carried on and of cattle-yards, oil-mills, hack stables, bake-houses, dairies, milk-sheds, aerated water factories, markets and lodging and eating houses, with a view to seeing that the terms under which these places have been licensed have been fulfilled and that the provisions of the Act and the by-laws in regard to them have been carried out.

(x) Periodical inspection of places where articles of food and drink are sold and the inspection of measures to prevent the sale of unwholesome and adulterated articles.

(xi) Periodical examination of the Municipal water-supply, from the point of view of sanitation and public health.

(xii) Inspection and control of markets, slaughter-houses, washing ghats, etc.

(xiii) Constant watch over all circumstances and conditions affecting or threatening to affect injuriously the public health of the town.

(xiv) Inspection of places where outbreaks of any contagious, infectious or epidemic disease of a dangerous character have occurred or are threatened, the institution of enquiries into the causes and circumstances of such outbreaks and the inception of measures to prevent the spread of the disease. A full and immediate report should be made in such cases to the Chairman, with recommendations for further preventive or remedial action.

(xv) Prevention of accumulation of rubbish and filth in backyards and similar places.

(xvi) A weekly check of the roll of coolies and carts at Municipal conservancy depots.

(xvii) Supervision of the work of conservancy depots and arrangements for the proper maintenance of the conservancy staff and plant.

(xviii) Periodical inspection of rubbish depots, incinerators, trenching grounds and sewage farms.

(xix) Checking the diaries of sanitary inspectors and other subordinates.

(xx) Checking the work and registers of vaccinators and seeing to the efficient working of vaccination.

(xxi) Taking steps for the accurate registration of births and deaths, satisfying himself by periodical inspection that the staff employed for the purpose are doing their work properly and preparing a weekly statistical table showing the birth and death rates of the town.

(xxii) Taking steps for the proper maintenance of registers at each burial and burning ground.

(xxiii) Scrutinizing all indents of the health department and passing such indents as he may have been empowered to pass; the other indents should be submitted to the Chairman with recommendations.

(xxiv) Scrutinizing all notices, charge sheets and summons of the various branches of the health department and forwarding them to the Chairman for necessary action

(xxv) Attending Magistrates' Courts in important cases connected with the health department when necessary.

Note.—The Health Officer shall carefully study the working of the laws in force relating to public health in the town and shall advise the Council of any improvements which can be usefully effected.

10. The Health Officer shall keep a register to be provided by the Municipal Council, in which he shall note his daily inspections, his observations, and instructions and the action taken thereon. He shall produce the register, whenever so required by the Chairman or by any inspecting authority.

11. The Health Officer shall make an annual report to the Municipal Council, through the District Medical Officer, comprising a summary of the action taken during the year for preventing the spread of disease and an account of the general sanitary state of the town at the end of the year. The report shall also contain an account of enquiries made and action taken in regard to the health of the town; it shall also contain tabular statements showing the sickness and mortality in the town, classified according to diseases, ages and localities. This report shall be submitted to the Government as an enclosure to the general Municipal administration report.

[Bengal.]

Health Officers and Sanitary Inspectors for Municipalities.

In exercise of the power conferred by section 349-F. of the Bengal Municipal Act, 1884 (Bengal Act III of 1884), as amended by Bengal Act II of 1914, the Governor in Council is pleased to make the following rules prescribing for the Municipalities outside Calcutta, in which Part XIB of the Bengal Municipal Act, 1884, as so amended, is in force :—

(a) the qualifications of candidates for Health Officers and Sanitary Inspectors, and

(b) the division of Health Officers and Sanitary Inspectors into classes or grades according to their qualifications.

Health Officers.

1. For the purposes of these rules, Health Officers are divided into two classes, first and second.

2. A candidate for the post of a Health Officer of the first class must have a registrable medical qualification and also a British diploma in public health.

3. (1) A candidate for the post of a Health Officer of the second class must have a registrable medical qualification, and, unless he holds a diploma in public health, he will also be required, before being actually employed as such Health Officer,

(a) to undergo a training of six months during which he must—

(i) attend twenty lectures and six demonstrations on Hygiene, to be delivered by the Sanitary Commissioner, Bengal.

(ii) show a minimum of thirty satisfactory attendances with a Municipal Health Officer, to be nominated by the Sanitary Commissioner for the purpose and

(iii) on obtaining a certificate of such attendances attend, in addition, special courses in—

(a) Vaccination,

(b) Vital Statistics,

(c) Sanitary Law, and

(d) Anti-malarial work,

to be conducted by a Sanitary Officer of Government, and

(b) to produce a certificate of such training from the Sanitary Commissioner, Bengal.

(2) The fee for attending the courses mentioned in rule 3, sub-rule (1), clause (iii), will be Rs. 50 unless the candidate is sent on deputation for training by a Municipality.

4. The salary of a Health Officer of the first class is fixed at Rs. 300 *per mensem* rising to Rs. 500 *per mensem* by an annual increment of Rs. 20, but in exceptional cases higher rates of pay may be allowed.

5. The salary of a Health Officer of the second class is fixed at Rs. 150 *per mensem* rising to Rs. 300 *per mensem* by an annual increment of Rs. 10.

Sanitary Inspectors.

1. For the purposes of these rules, Sanitary Inspectors are divided into two grades, higher and lower.

2. Sanitary Inspectors of the higher grade will be selected from candidates who have obtained the certificate of the Royal Sanitary Institute, after having gone through special courses of training in England or in India required for that purpose, or they may be appointed by promotion from the lower grade.

3. Every candidate for the post of a Sanitary Inspector of the lower grade when making his application must produce—

- (a) evidence of good character ;
- (b) a certificate of physical fitness from a registered medical practitioner ;
- (c) a certificate signed by the Sanitary Commissioner showing that—

- (i) he has attended a course of lectures and practical training in Hygiene and Sanitary Engineering in the subjects mentioned in rule 4, under the direct supervision of the Sanitary Commissioner and the Sanitary Engineer, Bengal, extending over a period of at least eight months, and
- (ii) he has duly passed an examination in such subjects.

4. (1) The course of lectures and training referred to above shall cover the following subjects :—

I. Hygiene—

- (i) a course of hygiene ;
- (ii) a short course, with demonstrations, on the manufacture and preservation of calf vaccine.
- (iii) a course of 10 lectures and demonstrations on the common skin diseases and infectious diseases of animals ;

- (iv) a short course, with demonstrations, on the theory and practice of disinfection.

II. Minor Sanitary Engineering—

- (i) drawing office and simple surveying ;
- (ii) latrines, trenching-grounds, etc. ;
- (iii) elementary principles of building construction
- (iv) elementary principles of water-supply ;
- (v) elementary principles of drainage
- (vi) practical demonstration of Sanitary Engineering works in Calcutta and neighbouring municipalities.

(2) The inclusive fee for the complete course and the final certificate examination shall be Rs. 30.

5. The salary of a Sanitary Inspector of the higher grade is fixed at Rs. 100 *per mensem* rising to Rs. 150 *per mensem* by an annual increment of Rs. 5 and the salary of a Sanitary Inspector of the lower grade is fixed at Rs. 50 *per mensem* rising to Rs. 100 *per mensem* by an annual increment of Rs. 5.

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Co-operative Building Societies and the Housing Problem.

IN the September number of the *Local Self-Government Gazette*, we dwelt on some aspects of the most important problem we have to face in our large cities—the housing of the lower, middle and wage-earning classes of the population. We indicated, *inter alia*, the need for a comprehensive and enlightened land policy for our municipalities and expressed the hope that State-aided Co-operative Building Societies would take a large and growing share in the provision of homes which would not only ensure sanitary conditions but would also be the centre of a higher moral influence enabling men and women to realise the dignity of life. In the present article, we propose to return to this subject of Co-operative Building Societies.

2. The question may be asked at the outset :—What is the need for special organisations to deal with the housing problem? Why should it not be left to be adjusted by the operation of the law of supply and demand? And political economists of a certain school would add that interference with the operation of this law is likely to do more harm than good. The answer is easy; it is the unrestricted play of this law that has given rise to the deplorable housing conditions prevailing in modern towns—the slums and barracks which sap the vitality of the race. The aim of the capitalist is to

secure as large a return as possible on his outlay. He therefore builds as cheaply as he can and demands as high a rent as he can get. The workman is economically weak and has to live near his work. He is not therefore a free agent and to talk of "competition" in such circumstances is ridiculous. When the industrial era began, the Manchester School of Political Economy with its doctrine of *laissez faire*, had its vogue. Industries were concentrated in towns and workmen came there in large numbers. An enormous demand arose for dwellings and the capitalist and speculator were allowed to exploit the situation thus created. Land Companies and Estate Companies, some sound but many purely speculative, house-farming and other ways of trading on a prime necessity of life soon followed. The result was inevitable—slums, overcrowding, a high death-rate, lowered vitality and all the attendant moral evils. We may perhaps give a concrete instance. In a previous article we commended the *land* policy of German cities. Their *housing* policy has, however, been a signal and conspicuous failure. Berlin, for example, has been described as "the most notorious home of the barrack house." The average number of persons per inhabited house in that city is 77! And we are reminded "that Berlin's high average of 77 inhabitants per house implies a far more appalling congestion in thickly populated working class areas".

What is responsible for this? The reasons are best given in the striking words of Mr. Dawson*: "Infinite harm has also been done by wild and often unprincipled speculation. Much of the building enterprise in German towns is unsound and unscrupulous, and behind it is the equally pernicious gambling of land companies ever eager to unload their property upon the public. There are in Berlin scores of land and estate companies, some perfectly honest, yet most of a speculative character, and some of the larger of these companies distribute princely dividends to their shareholders. The mischief done by many of these companies is not

* Municipal life & Government in Germany.

confined to the districts which, owing to their influence, are burdened permanently by excessive land prices and exorbitant rents but extends to house-property generally, and in the end the entire community is compelled to pay ransom to them. Worse still, much—in some towns most—of the building is done by men of straw, working with money borrowed at high rates of interest. These speculative builders live from hand to mouth, they are provided with funds week by week to cover the current outlay and by the time they have completed a block of buildings the interest paid or accrued on advances and on the heavy outstanding mortgage that remains often represents a standing charge quite out of proportion to the intrinsic value of the property and this charge the tenants have to pay” Nor is this all. There is “the pernicious custom of house-farming”. “A large owner of working-class property will let a whole ‘book’ of dwellings—often as many as a hundred—to a middle agent whose only capital is his capacity to screw out of the tenants a shilling or two a week beyond the amount which he agrees to pay to the landlord-in-chief. These parasites live by rack-renting, perform no useful service, and have no legitimate place in the social economy.” Can it be doubted after this description that the capitalist system has produced disastrous results and is responsible for all the evils which have now to be contended against and that, in the interests of the community at large, other organisations should be devised for the solution of the housing problem? The fact is—the housing question is many-sided. In its most essential aspect, it is a measure of social reform, as the character of the home determines the qualities of the race. This aspect is not, and cannot be, present to the capitalist whose aim is the minimum of outlay and the maximum of return.

3. When statesmen addressed themselves to this problem in Europe, they sought to correct the greatest evil in the capitalist system—the dividend-hunting. Philanthropic capitalists were encouraged to form themselves into building

societies—public utility societies—in which the dividend was to be restricted to 4 or 5 per cent : and the State extended financial and other assistance to these bodies. These societies did and are doing excellent work in many countries. One weak point, however, in the public utility society is that the workmen have no interest in the capital and working—there is no sense of “proprietorship”. The spread of the co-operative movement contributed this principle and building societies organised on co-operative lines are increasing in numbers and usefulness in Europe and America.

4. There is another important point. In all the countries in which these societies flourish, the State is most unstinting in its assistance, financial and fiscal, to them. Such aid has, in fact, been found indispensable for their growth and development. As the question of financial assistance to Co-operative Building Societies has been recently attracting attention in this Presidency, it may not be out of place to indicate in what manner public funds are loaned out to public utility and Co-operative Building Societies in the West. The United States Department of Labour has recently issued a most admirable bulletin on “Government aid to home owning and housing of working people in foreign countries” in which an exhaustive account is given of the various lines of policy adopted to solve the housing problem. We confine ourselves here to an account, based on this bulletin, of the financial assistance extended to building societies.

In England, the law empowers the Public Works' Loan Commissioners to advance moneys to organisations formed for improving housing conditions. We read—“Building Clubs and Societies are especially numerous in Wales, while in England, such Co-operative Societies as Ealing tenants, Garden City tenants, Hampstead tenants and the like have borrowed numerous and extensively.” The Land Inquiry Committee of 1912 has submitted an informing report on the housing question. The following extracts, which describe urban housing conditions and contain recommendations for

future action, are particularly instructive to us. The Committee says :—" Although comparatively well-to-do workingmen live in houses which are satisfactory according to the standards hitherto adopted, there is a growing desire among them for dwellings on better planned areas with gardens. If left to the uncontrolled play of economic forces, housing enterprise in the future will not meet this desire, but will proceed on the old lines." Again, " Public utility housing societies which have developed rapidly of late years combine several principles which make for the improvement of the type of house provided. They are, however, handicapped by the large proportion of their capital (one-third) which has to be raised by private subscription " - The Committee recommended therefore " that public utility societies shall be enabled to borrow from the State a larger proportion than now of the capital required for building working class dwellings on payment of a somewhat higher rate of interest ; the difference between the normal and the proposed rate of interest to constitute a national reserve fund as a security against loss."

In France, the Bank of Deposits—a Government institution—is authorised to make loans to building associations on condition that their dividends are limited to 4 per cent., their bye-laws are approved by Government and they make an annual report to the housing council. It is noteworthy that of 410 building societies working in 1914, 258 were co-operative and 152 joint-stock. Another feature of interest in French legislation is that charitable institutions are permitted, with the sanction of the local prefect, to purchase shares of building societies subject to the conditions that they may not own more than two-thirds of the shares of any single institution, that all their shares must be paid in and that they can lock up only two-fifths of their assets in building associations. Our readers will no doubt remember the proposal made some time ago in this Presidency that trust funds should be allowed to be invested in Co-operative Societies.

In Italy, most building societies are organised on co-operative lines and are doing excellent work. There were in 1910, 475 co-operative, 19 mutual aid and 33 independent private organisations. Under a series of laws enacted between 1903 and 1908, these are financed by the State Bank of Deposits under certain conditions.

Similar assistance is also rendered in Belgium—the pioneer in the housing movement—Denmark, Germany and in fact in all the countries of Europe and in America.

5. If State aid has been found indispensable in countries in which private capital is abundant, it is doubly so in India where the ruling rate of interest is high and capitalists have yet to learn that investments for long terms with Co-operative Building Societies are perfectly safe. The utility of State aid is in fact two-fold; at the initial stages, building societies cannot be started without it; later, it teaches private capital that such societies offer an absolutely sound security from a business point of view.

6. To sum up: The problem of housing is one of vital importance in large cities. For the reasons given already, private effort cannot solve it satisfactorily. The aim of a sound housing policy should be educative. It must raise the standard of comfort—must aim at building not to satisfy the existing standard, but to introduce a higher ideal and make people live up to it. In most countries the best results in this direction have been achieved by Co-operative Building Societies—State aided and State regulated—and we have no doubt that it is by fostering such societies in India that the housing problem in our large cities will be eventually solved. Their advantages are obvious. To the investor, they offer great convenience and ample security. He deals not with individuals but with a society; there is no need for private inquiries, collecting establishments, elaborate account-keeping, etc. Again, lands and buildings in a well-planned sanitary suburb in a city steadily increase in value, and the security, far from depreciating, becomes more and

more valuable as years go on. To the members, the benefits are undoubted. As a society, they can make better terms with capitalists than as individuals and they can provide themselves with all the amenities of good neighbourhood. They can also effect great economies in the purchase of materials and in actual building. There are also the social advantages, such as the provision of common wells and gardens, meeting-rooms and libraries and places of recreation. Building regulations, again, can be more easily enforced when the members feel that they are imposed in their own interests and that, if the common property is not developed on sanitary lines, it will depreciate in value. Lastly, the social and moral gain to the community by large numbers of people being enabled to own sanitary dwellings is immense.

Careful and patient experiments will, of course, be necessary before the types of society suited to the different parts of the country and the different classes of the community are evolved. We would, therefore, urge once again that practical steps should be taken at once to constitute a bureau of information and to bring together a body of well-informed and enthusiastic co-operators who will spread a sound knowledge of the movement and assist in other ways in the formation of such societies. We have no doubt that such an organisation is possible in this Presidency. There are already among us non-official gentlemen of position who are devoting themselves, heart and soul, to the spread of the co-operative movement; and year after year our University turns out scores of young graduates eager to be of service to their less fortunate brethren, whose fine enthusiasm will be an invaluable asset to the cause.



Communal Representation in Local Bodies.

[BY GHULAM MAHMOOD SAHIB MAHAJIR
KHAN BAHADUR.]

THE all-absorbing topic of the day in the domain of local self-government is the question of communal representation on Local Boards and Municipal Councils. Benefiting to a fairly appreciable extent by the separate representation granted by Government on Legislative Councils, there has risen a demand from some Mahomedan quarters for a similar concession in respect of District and Taluk Boards and Municipal Councils. This feeling is chiefly prevalent in the North and some other isolated parts of India where the Hindu-Mahomedan problem is still acute ; but even in those parts the demand is not universal, the more influential members of the community still deprecating the principle of division between the two communities. To settle the question once for all, the Indian National Congress at its session held in December 1913 brought forward a resolution protesting against the grant of separate representation to minorities but when it was found that there was some opposition to it from a certain section of the delegates, the resolution was wisely withdrawn as it was naturally held that it would lose its real significance if not universally carried.

The Karachi session was apparently advisedly taken advantage of for the purpose, as it was presided over by a distinguished Mahomedan leader well-known for his liberal instincts and cosmopolitan views, and any decision come to under his presidency would naturally have carried greater weight and authority. The attempt having failed at Karachi, it was resolved to try it again at the Madras session of the Congress last year. The resolution was duly drafted, passed in the Subjects Committee and brought on the agenda paper, but on the presentation of a private appeal to the President, signed by most of the Mahomedan delegates present and some

of their Indian sympathisers, the Hon'ble Mr. Bhupendranath Basu very considerably allowed the contentious matter to drop.

Considering, however, the all-important nature of the subject, the Mussalman community will have to come to an early and definite understanding about it. The first thing for consideration in this connection is whether there is any analogy between the work done in a Legislative Chamber and at Local or Municipal Boards. In the former, questions of grave importance involving political and administrative changes and affecting diverse interests are brought up for discussion. This condition certainly necessitates a keen watch on behalf of the Muslim community which has therefore to be adequately represented on it; whereas in Local Boards and Municipal Councils, only topics of local interest are discussed, about which there can hardly be any diversity of views. For instance, in matters such as expansion of medical relief, sanitation, repair of roads and tanks and the like, Hindus and Mahomedans are not likely to entertain opposite views. As enlightened citizens and patriots, they are both equally interested in preserving the health and promoting the prosperity of the extensive areas under their parochial charge, and in using their best energies and efforts for the achievement of this end. The only plea which may possibly be advanced by the Separatists is that it will give them a free hand and scope in the exercise of their religious rights and observances. This is, however, a matter more easily attainable when there is harmony between the two communities than under other conditions. The unseemly quarrels which we hear of at times are entirely due to personal spite brought on by factious spirit on the part of miscreants on both sides. All this will vanish and evaporate the moment there is perfect understanding between their respective leaders. Toleration, goodwill and co-operation are the life and soul of good citizenship and sure road to success, while exclusiveness and isolation always create bad blood and engender mutual hatred and

contempt which must necessarily lead to serious results. Moreover there are some parts of India where the percentage of Mahomedan population is too small to warrant the grant of separate representation. This condition prevails to a large extent in the Madras Presidency. In such cases, Mahomedan interests are sure to suffer when the feelings between the two communities are not of a cordial nature. This is a serious condition which it is the duty of every patriotic Mussalman to guard against. Again, in places like Madras where the Hindus and Mahomedans happily live as members of a joint family, and also in places where the tension between them is by no means acute, insistence on separate representation is hardly expedient and can certainly serve no useful purpose. This is how I look upon the question from my own point of view, supported as it is by personal experience and long and intimate association with Hindu leaders and patriots. I admit, however, that this is but one side of the question and that those who are in favour of separate representation might possibly make out a strong case for themselves. I have absolutely no quarrel with them. After all, it is only a question of local needs and conveniences of which they are the best judges. All that I wish to impress on my co-religionists is the desirability of co-operation with their Hindu friends and that in whatever they do they should be animated by a desire to contribute to the development and growth of Local Self-Government, so essential for the advancement and prosperity of the Motherland.

Malaria Operations in the City of Bombay.

THE Report of Malaria operations in the City of Bombay has been before us for some time. There, as in Madras, a preliminary mosquito and malarial survey was first undertaken to serve as a guide for instituting suitable antimalarial measures. After the severe outbreak of malaria in 1907 and 1908, the Government of Bombay placed Dr. Bentley on special duty to enquire into the causes and extent of malaria

in Bombay and as to the possibility of taking remedial action. The following were his findings :—

1. Bombay is not in itself a naturally malarial area.
2. The undrained and low-lying portion of the island—popularly deemed highly malarial—was, as a matter of fact, extraordinarily free from it and that it was really in the older parts of the town, namely, wards A, B & C, that a most dangerous and widely spread amount of malaria prevailed.
3. The only dangerous, because malaria-carrying, mosquito is at present a variety of *Anopheles*, namely *Neocellia Stephensii*.
4. The chief habitat of this mosquito is the common open well—more especially the private domestic wells inside dwellings. These constitute 65% of the breeding places, while cisterns, fountains, etc., are responsible for another 16% and yet another 19% being made up by temporary collections of water.
5. The area of extreme incidence of malaria in Bombay corresponds with remarkable exactness with localities in which private domestic wells were common; one of the most conclusive proofs for this statement being in the revelation that there was high prevalence of malaria among the Parsis, a community, whom, from their superior average standard of living, education and readiness to resort to medical advice, one would expect to show a lesser incidence of malaria than other communities such as the Hindus or Mahomadians. Nor could this be due to any peculiar racial liability to the disease for in quarters where the Parsis were extremely affected, the Mahomadians and Hindus were also affected in an almost the same degree; *per contra*, Parsis living in non-malarious tracts were not more liable than people of other races. So then the question of malarial infection was mostly one of locality and the “extent of infection” again depended on the prevalence of domestic wells. In other words, the incidence of malaria in any locality is, most emphatically speaking, a function of the

number of domestic wells in that locality; if their number is large, the malarial incidence is also large (Wards A, B & C.) and if their number is small, the incidence of malaria is also small. (Wards D, E & F.)

6. There is no reason why the highly infected parts of Bombay (A. B. C. wards) should not be reduced to the level of malariousness of the northern parts of the island, if the local source of infection, namely wells, is eradicated; if, on the other hand, such eradication were not undertaken, infection may gradually spread until malaria was thoroughly endemic in Bombay.

These findings were the basis of all recent antimalarial action in Bombay. The especial danger of the existing domestic wells forming local sources of infection was so well appreciated both by the Government and the Corporation that the former gave a special grant of one lakh of rupees with the special object of assisting in taking action against infected wells, and the latter sanctioned an extension of antimalarial measures already undertaken and engaged a special staff placing it under the charge of a Special Assistant (malaria) to the Health Officer.

During the year 1914-1915, the extent of the work undertaken by the Special Malaria Department was as follows :—

As elsewhere the work resolved itself into two main divisions :—

- (1) Investigation.
- (2) Prevention.

Investigation: The routine procedure was as follows :—

1. Preparation of spot maps of each section of the city, showing permanent breeding places.

2. Preparation of weekly reports of larvæ-breeding localities and publication of the same (free of charge) in the local papers.

3. Examination of Anopheline larvæ.—1,204 Anopheline larvæ were examined of which 177 were those of *An. Stephensii* and 4 of *A. Culicifacies*.

4. Spleen examination.—House to house inspection for enlarged spleen among children was conducted during the year in Fort North, Esplanade, Chaupati and Fort South. Of these Fort South is mostly offices, and the number examined is very small and so the statistics are not of much value. The high percentage at Chaupati is explained by the temporary sheds of the City Improvement Trust and Permanand's chawls. Fort North shows great improvement over figures of previous year, while Esplanade shows a little increase, which is sought to be explained by the fact that the population in the poor class chawls is a changing one and among those of the City Improvement Trust temporary sheds near Carnac Bridge are a number of children with enlarged spleen from infected districts. But then para 46 of the report tells us that the spleen rate of the temporary C. I. T. chawls has actually diminished during 1914 and this requires explanation.

Statistics by wards show that it is only in A ward that there is a gradual reduction in spleen-rate during the last three years, whereas wards B, C and D show an actual increase over last year's figures, for which no explanation is again offered in the report. The spleen-rate for the whole city shows a very small increase, 6.75 against 5.87.

The spleen-rate by castes shows that the rate is lowest among Mahomedans and next in order are Jews, Hindus, Christians and Parsis, who are shown however a rate below 10% which is the figure even for healthy areas. The average spleen-rate in a healthy area is laid down as 10% and less, while in a moderate endemic area it is between 10 and 25%, in a highly endemic area it is between 25 and 50%; and a hyper-endemic area, it is above 50%. Judging by this standard, Fort North and Esplanade (i.e., A ward) are still moderately endemic, although the spleen-rate for the whole city was

6·75, showing a sudden reduction. The statistics of the District Registrars prepared for children attending their dispensaries show in wards A and E as high a percentage as 38·09 and 27·66 respectively, while the general average of wards A to G comes up to 11·12. When this spleen census is arranged by races, there is a very strikingly low percentage among Hindus, 9·85, against the next nearest figure 10·14 among Christians and this, notwithstanding the fact that the largest number of children attending the Malaria Dispensaries were Hindus. No explanation is vouchsafed for this remarkably low figure, as also for the discrepancy between these figures and the figures given above for wards and castes generally. Nor is this in keeping with the findings of the Joint Schools Committee of the Bombay Municipality which however showed a very low spleen-rate in the school-going children amongst the three principal Indian Communities, Hindus 2·82, Mahomads 2·88 and Parsis 4·11, while Christians showed the highest 18·18 and next Jews 12·82, while in the general figures Christians and Jews show a lower spleen rate than Parsis. Is it possible that Parsi School children are well looked after and the same could not be said of the Christian and Jewish children? Then again, how are we to reconcile the three separate figures of Parsi splenic index, namely, 9·55, 14·02, 4·11 arrived at by the special Malaria Department, the Zoroastrian Conference and the Joint Schools Committee of school children respectively? It is quite true that the number examined varies; yet the difference is striking.

5. Parasite rates of 'Random sampling' and patients suffering from malaria.—Random sampling shows a fall in all the infected wards except D which alone shows a rise. The rates for patients suffering from fever are of no great value as the number of slides examined were so few and varying that no comparison can be made.

6. Analysis of well-water.—1,831 samples of well water were analysed during the 3 years preceding and of these 204 or 11·14% were declared fit for potable purposes.

Prevention :—Anti-malarial operations.—As elsewhere, these were measures of permanent utility and temporary utility.

(1) *Domestic wells*, having been proved to be the chief source of danger, received most attention. They were tackled with in one of three ways and no action was taken unless a well was infected with *An. larvæ*.

(a) Complete filling in—in cases of those that were entirely bad: many of them not being used for any purposes whatsoever and the owner making no objection to fill them; 87 wells were so filled up.

(b) Hermetically covered over with or without hand pumps as the owners desired them or not. The cost of each of these is Rs. 40 and the Standing Committee are willing to assist every deserving case.

(c) Covering over with trap-door allowed wherever serious objections were urged and where religious objections were urged. Trap-door concessions were given on condition that a notice board to guard the public against its indiscriminate use was allowed to be fixed and continued. Nevertheless the method is objectionable from the strict doctrines of Malaria-prevention; but the Standing Committee have preferred to take the risk of abuse of trap-doors and possible spread of Malaria to the impolitic condemnation of overruling religious prejudices.

Some irritation and annoyance were caused by the shortage of water supply, following close upon the heels of the Anti-malarial measures. The Municipal Corporation and the Government have since come to the conclusion that the two did not stand in the relation of cause and effect and that the shortage of water supply was really due to causes, such as a series of years of short rainfall, increased consumption due to increased trade and population and the erection of new mills and to a certain extent to the accidental cotton fires— causes with which the Malaria policy had nothing to do: in fact, the co-existence of shortage of water supply and the Anti-malaria operations had an unfortunate coincidence.

The following were the general rules laid down for the distribution of the Government grant of one lac of rupees : if religious objections were held valid and poverty found to exist, assistance might be given : of course, the really well-to-do must still do their own work but help may be given both to the middle class and the really poor.

In the case of wells sunk for building purposes it was laid down that they should be hermetically covered over with concrete with hand pumps fixed and that, after the building work is finished, the well should be filled in.

Out of 3,309 wells in A, B, C, D and E wards, 2,391 or 72·25% have been protected and out of the remaining 918—

- 116 are under fish trial.
- 362 are under correspondence.
- 38 work to be done by municipal agency.
- 46 under legal notice.
- 18 in Court.
- 338 not breeding at present.

Very little is being done in F and G wards.

(2) *Tanks*.—The problem of tanks is apparently not so important as breeding places in Bombay as in Madras. Wells seem to be to Bombay what tanks are to Madras. Tanks were either filled in or covered over with a trap-door and rotatory pumps attached.

(3) *Cisterns* again required attention unlike in Madras, and besides, all cisterns in Government buildings and 2,428 in private buildings were protected.

(4) *Storm-water entrances* were made mosquito-proof by fixing wrought-iron plates under the grated storm-water covers. It is true that culex and stegomyia are not malaria-carrying mosquitoes : but the work is undertaken on the ground that it is advisable, from a malarial standpoint, to eradicate as many breeding places as possible, because as, in times of distress, even malaria-carrying mosquitoes may prefer to breed

in uncongenial surroundings rather than suffer extinction of the race.

(5) *Traps*.—As *M. larvæ* were found breeding in gully traps, they are to be provided with tight-fitting cast-iron covers.

(6) *Water connections* to buildings would be allowed only if the place underneath a water-tap is paved and drained, and removable receptacles and not fixed masonry ones are provided.

(7) *Roof gutters* in several houses in Fort allowing *M. larvæ* to breed were sloped and all obstructions removed.

(8) *Underground cellars*.—The Special Malaria Officer is of opinion that no permission should be granted for the construction of these cellars as they cannot be kept dry and water-tight and therefore such cellars should not be allowed in the city.

(9) *Railway borrow-pits*.—The attention of the Railway authorities is drawn to this.

(10) Necessary steps are taken to render the following places mosquito-proof by the authorities concerned.

The Malabar Hill Reservoir,
Ponds and wells in the Victoria Gardens,
Port Trust areas,
Arsenal, Royal Dockyards, Customs House areas and
Town Hall compound.

(11) *Education* regarding Anti-malarial operations.—2 lectures were delivered, one to the students of the Sanitary Surveyors' Class and another to the members of the Instituto Luso Indiano.

(12) *Quinine distribution*.—Tabloids of quinine Hydrochloride (B. W. & Co.) were distributed free through the agency of charitable institutions, District Registrars and Malaria Inspectors and others who made house to house visits in malarious localities.

(13) *Introduction of fish.*—Apparently this is neither so popular nor so efficient in Bombay as it is in Madras.

(14) 47,679 pools, as against 39,435 in 1913, were treated with pesterine.

(15) Removal of old receptacles was inaugurated during the year and 3,878 such were removed.

From the above it is evident that ever since the inauguration of the Anti-malarial campaign in Bombay, there has been a decided improvement in the health of the city, the mortality figures showing practically a steady fall in every one of the divisions affected.

Wards.	Mortality from Malaria.			
	1910	1912	1913	1914
A.	80	91	65	51
B.	78	101	47	25
C.	50	58	53	42
D.	29	22	24	22
E.	37	56	47	45

The Milk Supply of Rangoon.

THE important question of devising further measures to improve the regulation of the milk supply was exhaustively considered by a special Sub-Committee of the Rangoon Municipal Committee appointed for the purpose. As regards milk produced in the town itself, the existing powers of the Committee to deal with it are considered sufficient, but by far the greater portion of the milk consumed in Rangoon is imported by rail from districts situated outside the Municipality, while some of it is imported by road and water from places outside Municipal limits. The real difficulty lies in ensuring that the milk so imported is not contaminated or watered before it is received in Rangoon. The Municipal

Committee unanimously adopted the following conclusions, and definite proposals for legislation were submitted to Government in January 1913 with the object of empowering them to carry out the measures proposed :—

(1) To license and inspect the premises of milk importers from the suburbs.

(2) To prevent import of milk except from licensed premises.

(3) To establish a depot for the receipt and issue of all imported milk.

(4) To prevent watering of milk before arrival in Rangoon.

(5) To enforce the use of locked vans for the transit of milk from the milk farms to the depot in Rangoon.

(6) To require each licensed dealer to report to the Veterinary Officer any case of serious cattle disease on his farm.

(7) To take samples of milk at the depot for analysis on payment at a fixed price.

To these proposals Government replied asking to be furnished with information as to the methods of supervision of the milk supply in other Indian Municipalities, such as Bombay and Calcutta, and pointed out that in neither the Calcutta nor Bombay Municipal Acts were there any provisions for regulating or inspecting places outside the limits of the Municipality where milk is produced and asked that some further justification should be given for proposing such a measure for Rangoon. But it may be as well to state here that there are wide differences in the circumstances of milk supply between Rangoon and Bombay, Calcutta and the other large Indian towns. In Rangoon as much as 80 per cent. of the milk supply is produced outside the limits of the town and consequently very wide powers of inspection and regulation are needed which elsewhere would be excessive and unnecessary. A reply was sent to Government, and after considering

the proposals made by the Municipal Committee, Government replied to the effect that they were advised that the Committee already possessed ample powers under the existing provisions of the Burma Municipal Act to take action for the better control of the milk supply. It appeared to the Committee from this reply that the position had not been entirely apprehended by the Legal Adviser to Government, and the Committee were again advised that the power to inspect milk-farms situated outside Municipal limits—from which 80 per cent. of the milk consumed in Rangoon is imported—the enforcement of sanitary measures at such farms, the prevention of contamination or watering of milk before it is despatched to Rangoon and the regulation of the transport of milk to Rangoon—which are the first essentials of their scheme—could not be directly and conveniently exercised without the conferment upon the Committee of additional powers by legislation. The Committee were further advised that the existing powers were insufficient even for the inspection and testing of milk in course of transport within the Municipality and for the seizure of milk found on such inspection to be either tainted or open to suspicion. In view of the opinion expressed by their Legal Advisers, the Committee again addressed the Local Government urging the necessity for legislation upon the lines previously proposed by them. To this last letter Government replied asking to be informed exactly in what way the Committee proposed to give practical effect to the powers which would be conferred upon them in the event of the Burma Municipal Act being amended on the lines suggested. As requested by the Local Government, a report was submitted explaining the way in which the Committee proposed to give practical effect to the powers which would be conferred upon it in the event of the Burma Municipal Act being amended on the lines suggested by their Legal Advisers. Briefly stated, the scheme of the Committee is to take all reasonable measures to ensure that milk shall not be drawn from diseased cows, that the milk from the moment it is drawn to the time of its receipt at the Depot in Rangoon shall not be contaminated

or watered, and that if retail dealers desire to sell watered milk they will be permitted under license to do so, one of the conditions of the license being that the milk shall be watered at the Depot only with pure water up to a prescribed limit. It must be recognised that in the interests of the poorer classes the sale of cheap but wholesome watered milk must be allowed, and it may be remarked here that the percentage of fat in local milk is greater than that of English cows, so that a fair amount of water may be added without bringing the percentage of fat below that allowed in England.

The last letter received from the Local Government indicates that the Lieutenant-Governor is advised that the Municipality has already sufficient powers to carry out the greater portion of its programme, namely, that which applies to action within the Municipality, and also to control to a certain extent the production of milk outside the Municipality. On further consideration the Committee has decided to make a beginning with so much of the scheme as it is possible to introduce under the existing powers contained in the Burma Municipal Act, and draft bye-laws have accordingly been prepared and published and copies are being circulated in the vernacular to cattle-keepers and vendors of milk for any objections or suggestions they may wish to make. Briefly, the measures which it is proposed to take are (a) the prescription of bye-laws regulating the sanitary condition of dairies and places where milch animals are kept for profit, one of the bye-laws being that every owner of milch cattle kept for sale of their milk, and every occupier of a milch cattle stable where cattle are so kept, shall admit at all times the Health Officer or Veterinary Officer or other officer appointed by the Committee for the purpose, to inspect the premises occupied by them and the cattle therein for the purpose of carrying out the provisions of the bye-laws; (b) the establishment of a depot where all imported milk shall be tested; (c) the prescription of bye-laws regulating the sale of milk within the limits of the Municipality. For the purpose of these bye-laws standards are prescribed for

milk that will be deemed to be "pure milk" and "watered milk", all vendors of milk must be licensed to sell pure or watered milk, as the case may be, and all watered milk shall be kept only in vessels labelled as containing watered milk. As regards imported milk the license provides that the licensee shall not sell or expose for sale milk which has been obtained from a dairy situated outside Municipal limits unless such milk has passed through the Municipal depot and various other conditions to ensure the same control over dairies situated outside Municipal limits as in the case of dairies situated within Municipal limits. Experience will show whether the above measures have been successful in attaining the object in view, namely, a much needed improvement in the quality of milk sold in Rangoon. If this attempt does not succeed, the Committee will be justified in pressing for larger powers to enable it to introduce the wider measures contemplated. These would be prohibition of import from any but licensed dairies, prohibition of import of watered milk, and introduction of sealed cans.

The Field of Public Health Work, The Health Officer, and His Relation to The Municipal Government.*

[BY GEORGE E. TUCKER, M.D., RIVERSIDE, CALIFORNIA.]

IN speaking before this League, I realize the necessity of avoiding a technical discussion of the various problems which confront public health departments. I further realize how intimately and how intricately the protection of the health of individuals who go to make up a community, or municipality, is interwoven with the various departments of the municipal government.

Community life, with its many vexatious problems, has developed one of interest to every individual living in it, namely, the public health problem. The health and prosperity of

* Abstract of a paper read before the League of California Municipalities.

the community are dependent upon the health of the people, and a healthy community is prosperous, attracts people and increases the value of property. Public health is purchasable, and within certain limitations, a community can determine its own death-rate.

Health departments are the direct outcome of the knowledge that disease can be prevented. The general prosperity of the state is dependent upon the general health of the people.

Money put into health and sanitation of any character must be regarded as an investment from which definite returns are to be expected, and must not be considered in any sense an unprofitable expenditure.

It has been noted that in the Canal Zone where such wonderful work has been carried on, the death-rate for 1911 among 10,489 Americans was only 4.48 per thousand. This record is a remarkable one and is probably without rival. And all this, says Colonel Gorgas, has been accomplished at an expense averaging one cent per day for each individual. If this result can be secured at this cost in the centre of a tropical jungle, what would not a similar expenditure do for our cities?

If public health administration in our various states and municipalities has not been as effective as could be reasonably desired, and if the state-wide results in the various parts of the country have from time to time been the subject of unfavourable criticism, part of the blame, at least, should rest upon the shoulders of the disinterested public who have failed to take sufficient interest in public health to demand the conditions which they desire.

This idea has been well expressed by some one from the State of New Jersey, who stated that "In the history of corporations, or institutions, and in public matters we generally find that administration precedes efficiency, that laws tending to the perfection of administrative work take precedence over laws tending to the efficient direction of same, that citizens and the public are more inclined to allow their minds to

dwell on generalities than on detail. As a consequence of this psychological fact, boards of health have been appointed as a matter of course, but without due regard to their efficiency. Man is so accustomed to be sick and disabled that through his inability to properly connect cause and effect he has accepted the inevitable without comprehending the reason for unnecessary illnesses and deaths. Then again, the health board being a road for publicity, politicians and those politically inclined have taken advantage of such position in order that they might use it as the first rung of a ladder for ascent to something more remunerative and more agreeable. Others have employed it as a resting place for easy work and moderate income. Material advances in public health matters have been invariably either through public calamity, a temporary hysteria or excitement brought about by some one calling attention to defects and making demand for improvement, or the slower process of public education and resulting clamour for better conditions. We have in this state, as we have in other states, hundreds of local boards, each governing itself, each mapping out its own policy, and none correlating, so that the unhealthy conditions of one community are not prevented in passing over to another. Disease is not a local condition. Disease processes and dissemination should be considered as a broad matter, demanding at least state control. It is not for us to discuss here government control."

Local boards of health made up of men who are not in a position to know the condition of a city's finances, who are not familiar with the many problems involved in the acquisition and carrying of an adequate water supply, who are not fitted by training to consider engineering difficulties connected with the collecting and disposal of sewage, who know but little of the details of the production, distribution and manner of handling food products, are not qualified to render service to a municipality which can be considered either efficient or economical.

In one of our Eastern cities the board of health consisted of a liquor dealer, a grocer, a seller of shirtwaists, a man of

leisure, a newspaper humorist, and the one doctor upon whose presence the law insists. And the one doctor, as it happened, was an eye and throat specialist, so his knowledge of and interest in preventive medicine as related to municipalities must have been in inverse ratio to his proficiency along his own line. These selections, absurd and outrageous as they were, were accepted with perfect equanimity by a great majority of the inhabitants of that city.

Not many years ago the health officers and boards of health were appointed for the purpose of handling situations which arose as a result of the introduction and dissemination of contagious diseases. The health officer established quarantine, put up a flag, attended to the details of release and fumigation. The duties of the other members of the board consisted largely in acting as a buffer between the unfortunate citizen who was restricted in his movements by virtue of being a sufferer from a contagious disease and the health officer who did his duty and established such restrictions.

The question as to the necessity of a properly trained physician and an engineer on a board of health is seldom argued.

Health boards are concerned with water supplies, sewage disposal, collection and disposal of garbage, street cleaning, tenement-house sanitation, and the solution of these problems requires the services of engineers and it is for this reason that a municipal board of health should have for at least one of its members, an engineer whose judgment may be accepted as final.

Further, representatives on municipal boards of health should be chosen with the idea of selecting individuals who are intensely interested in the very problems which require the services of an engineer, a physician and a financier to solve. A representation of two successful laymen who are in a position to pass judgment on the expediency of proposed reforms are an invaluable assistance in the conducting of municipal health affairs. Usually, the Mayor of a city, in touch with the

popular chord and the public purse, becomes a most excellent member. In municipalities where public school inspection has become a fixed institution, as a fifth member of the board, the selection of the inspector might be justifiable. Health interests in the hands of five men representing the knowledge which the above mentioned men should have would be safeguarded, and with the co-operation of an enlightened public, conditions would be approached which would permit of the attainment of the ideal so successfully attained by our own government in the Panama Canal Zone. It would then be realized that public health officials must be full time officers and further, they must be adequately paid.

Such an official working in conjunction with such a board, backed by sanitary laws which are practical of administration, would bring about the ideals of preventive medicine.

The objection might be raised that such an organization and plan as I have just outlined might be applicable to large cities, but the smaller communities would never be justified in adopting an elaborate scheme of public health supervision. For a small community, then, the full time county, or district, health officer, working with a local board of health made up of members who are not supporting any fad or faith, would offer a solution to this problem.

The district health officer should have jurisdiction over all parts of his district and should have authority exceeding that of the municipal health officer.

The safety of a municipal water supply is oftentimes dependent upon the safeguarding of the source against contamination by neighbouring municipalities. For its own protection, or selfishly speaking, it is seldom necessary for a city to be deeply concerned regarding the proper disposal of its sewage, inasmuch as conduits are installed to carry away such refuse, but a neighbouring city may suffer from improper disposal.

Likewise, food supplies are derived from sources located in adjoining cities and counties and the control exercised by

one municipality or county, may not be at all comparable to that enforced by its neighbour. Standards for food products are not uniform and there is much useless duplication of effort on the part of health officials. For example, milk produced in dairies in Riverside County under the inspection of Riverside County Officials, is shipped to the cities of Los Angeles and San Bernardino, and also to the town of Colton and intervening points between Riverside and Los Angeles. The health authorities of Los Angeles are not satisfied with state inspection, nor are they satisfied with the control exercised by county officials of Riverside County. The city of San Bernardino ignores the state, county and municipal inspections previously mentioned and we find as a result, representatives of four different departments of health exercising their right of protecting their community against a contaminated milk supply.

The same conditions prevail in the meat and vegetable supplies. Vegetables which are eaten raw are produced in many counties of Southern California in truck gardens farmed by Chinamen, and any one familiar with the Chinese method of growing vegetables recognizes the necessity of proper inspection and control.

Only the larger abattoirs have government inspectors delegated to safeguard the public against the sale of meat from diseased animals. The greater part of the meat used in our smaller communities is slaughtered within the vicinity of the place of consumption and little or no protection is afforded to the consumer.

The control of communicable diseases in any given locality, to a certain extent, is dependent upon the care exercised by health officials in neighbouring communities. And with a district health officer there would be less danger of the spreading of contagious diseases from one neighbourhood to another.

Health officers are called upon to exercise police powers which are not universally approved and in this free country of

ours, any department of the government which is dependent for success upon the restriction of universal freedom, any officer called upon to enforce such restrictions, must of necessity bring about a certain amount of discord and create a few friends not over enthusiastic in their protestations of friendship. In brief, it is possible for a health officer to become unpopular. Were they elective officers, the recall might be easily worked overtime.

The field of public health work is continually broadening until at the present time its relationship to education, the prevention of crime, insanity, blindness and industrial accidents is well established.

If the spread of tuberculosis is dependent upon a low resistance of the people and if the cure of tuberculosis is to a very great extent dependent upon the factors of rest, fresh air and good food, and if it is true, as it seems, that the application of these therapeutic principles assists in bringing about recovery by increasing resistance, why are they not as applicable to healthy persons to maintain health as they are to unhealthy persons to bring about healthy conditions?

If the open air school building can be constructed for one fourth to one-half the cost of the so-called closed building, and if the children attending such schools show a fifty per cent. increase in efficiency, as statistics indicate they do, and if our tuberculosis school children improve under such therapeutic procedure, why should we continue to build monuments of brick and mortar for future generations to destroy because of their unfitness from a health standpoint?

The development of adult criminals is oftentimes the result of preventable pathological conditions which should have been recognized and corrected in early childhood.

Here again the principles which are applied for corrective purposes for the relief of social delinquents should, if applied early in accordance with the methods now established in

public school inspection, relieve the Juvenile Court departments of the major portion of their work.

The municipality has an interest in the welfare of its citizens and its health department, while possibly not assuming direct responsibility for industrial conditions, should at least keep in touch with such situations and have some knowledge of the conditions under which working men are employed.

"The late Dr. Charles Harrington, under whose supervision was shown in Boston, Mass., in 1907, for the Massachusetts State Board of Health, the first exhibit in America relating to occupational diseases, called attention to the fact that the disastrous effects attributed to occupations were in very large part due to non-observance of the principles of general hygiene and chiefly to inattention to that most important sanitary measure, perfect ventilation. He further gave it as his opinion that with proper attention to this matter and improvement in the home and home influence, greater attention to the character and preparation of food, and a more general observance of the beneficial influence of outdoor exercise, no very great differences would be noted in the health of the various classes of working people, and the expression 'occupational diseases' would lose whatever significance it now has."

Business men and the public should be brought to understand that upon them rests largely the responsibility of the health of the community. Without their interest, encouragement and willingness to fight for a principle, nothing can be accomplished. No medical men nor health officers can bring about any results without their support.

In conclusion, since the municipality is directly concerned in the health and welfare of its citizens, and since their prosperity is to a very great extent dependent upon the establishment and maintenance of healthy conditions, when sanitary measures are enforced to the same degree that they are carried on in the standing armies of every country in the world, we may look

forward to the attainment of the ideal conditions which now prevail in such armies.

When that time comes, vaccination against small-pox will be universal, likewise vaccination against typhoid fever will be applied with the same thoroughness as it is at the present time in all of these armies. Every municipality will maintain an isolation hospital, constructed and equipped to take care of patients suffering with contagious diseases. All water supplies and water ways will be free from sewage. Our general milk supply will come from healthy cattle, will be collected under clean conditions and as a further safeguard, will be pasteurized in bottles. The municipality will exercise inspection and control of all food products sold within its limits. Health officers will be full time officials and reasonably well paid. Inspectors sufficient to carry on the necessary work and laboratories for performing the duties usually referred to those departments will be supported by or be available to every municipality. At that time public health work will be given the recognition it deserves and every dollar spent will be returned to the public with most satisfactory dividends.

The Milk Question in Calcutta.

[BY CAPTAIN J. MATSON, I. A., ASSISTANT DIRECTOR OF
MILITARY DAIRY FARMS, NORTHERN CIRCLE, BENGAL.]

(Concluded from the last issue.)

2. As to the general measures, and again beginning with the City cowkeepers, *the first essential in my opinion is to provide for their removal from the City altogether.*

(i) Of course I do not suggest *an immediate wholesale removal*, obviously it is not practically possible, but no scheme can satisfactorily meet the requirements of the case, which does not contemplate the eventual disappearance of professional cowkeeping in the city.

(ii) I do *not* recommend the acquisition of land in the suburbs by the Corporation for the purpose of letting to these men to build cowsheds on.

Land for gowalas in
outskirts of city
unsatisfactory.

Brief reasons are:—

(a) Even if nothing is done by the Corporation to hasten that end, it cannot be many years, in my opinion, before other economic factors will drive the bulk of the producing side of the milk trade away from even the present outskirts of the city, so that at intervals the Corporation would be called upon to find new land further out.

(b) The amount of money involved would be very large, having regard to suburban land values and cost of compulsory acquisition.

(c) The control of a suburban supply appears to me the most difficult of all for purposes of getting it pure. It has so many avenues of approach and escape that I fear no amount of law or number of inspectors will suffice. On the other hand, a supply from the country which comes in by rail *must* pass selected points, and can be supervised.

(d) Suburban cattle sheds will do little or nothing to conserve the breed of cattle, and stop the slaughter of cows. The value of land is far too high to permit of its being devoted to grazing in appreciable areas. The scraps of grass land that one sees in the shape of building sites as yet unoccupied, bits of compounds, road sides, etc., amount to nothing in the aggregate.

(iii) The need, therefore, is for land at some distance from Calcutta, far enough away to get such land at reasonable prices. I do not know the common values of agricultural land, far enough away to be unaffected by urban development, but I should think it unlikely that the required land would be found much under 50 miles from Calcutta. This is a matter for enquiry.

Class of land needed.

Even much greater distance is not prohibitive, now that railway freights on milk are so much reduced, and artificial cooling so effective. As regards freights, I approached the Railways on the subject in 1913, and succeeded in getting a revision. The rates are now as shown in Appendix I.

How to get the milk-men to leave the city.

Then you have to induce the owners of the cows to move out to this land.

I anticipate considerable difficulty in getting any large proportion of the present gowalas to move, they will advance all sorts of reasons, the real one being that they dislike leaving the surroundings to which they are accustomed.

I do not think it would make much difference, whether the move were to the outer suburbs, or further away. They are close to their customers now, and either proposed change would take them too far to continue distribution as at present. They do not *want* to move and would far rather continue as they are (in every way.)

It may be mentioned that in Europe, the old City milk-men, taken as a whole, did not move out into the country; what happened was, that they found they could buy and bring in the milk, from the farms in the country, more cheaply than they could produce it in town, so they tended to become the retail distributors, while the milk selling farmers in the country increased in numbers. A gradual process leading to the same end is what we may hope to see here. Therefore, the measures adopted should be designed both to foster the production of milk by farmers in the country, and to encourage the gowalas, who desire to remain cattle owners, to move out with their herds.

For the latter you must, of course, first obtain some land, but it will not do to just take the gowalas out there, and dump them down. You must have some organization to look after them to some extent, and I think it will be found that

the sheds and necessary houses must be furnished for them, at all events in the beginning.

After careful consideration of this aspect of the matter, and having regard to other requirements, I have concluded that a Municipal Dairy Farm should be established to (as one of its objects) lead the way for the gowala, provide for his housing and that of his cattle, for the cheap (or free) transit of his milk to the city, for all necessary instruction and help in sanitary methods and habits, the cheap grazing of his cattle, etc. Details of how it is to work are given later on.

(iv) Having provided the attraction and all necessary facilities for the men to move, it will be reasonable to exercise gentle pressure to induce them to go, or to give up cattle keeping in the city.

The first thing, I suggest, is to prohibit altogether the building of any new cow sheds; or else to raise your standard of construction and room, etc., for new sheds, very largely; secondly, continue gentle pressure on existing cow sheds in the direction of improvements, all the time keeping before the men the offer of easy terms in the country.

If, however, a gowala moves and abandons a shed he has put up in the city, I suggest that he should be liberally compensated. I may say here that I do not think anything effective will be done without a fairly large expenditure of money by the Corporation. The greatest difficulty will be to make a beginning. I do not think it will be possible without some organization, such as I propose, to undertake the connected work.

(v) Moving the gowalas to the country, or replacing their milk by that of farmers, is, however, going to take a lot of time, and even when they go, their milk has still all, or nearly all, the sanitary defects noticed.

We have seen that, apart from the floors of the cow sheds, and one or two connected points, the present conditions are most unsatisfactory; secondly, that it is necessary to ask for legal powers (if not possessed) to compel the observance of essential sanitary precautions in reference to clean animals, clean clothing, clean vessels, protection from flies, dust, etc. But it is quite certain that law by itself will not do much; to get real improvement is partly a matter of education; active teaching which will need to be long continued. For that we must first instruct the teachers, secondly, example is many times more effective than precept, so that if tangible results are to be achieved, in our lifetime, I think the Corporation must lead the way, and *show* what is wanted. This again leads me to recommend a Municipal Dairy Farm at the beginning.

Sanitary defects require time to eradicate.

Teaching required.

Another reason for Municipal Dairy.

As regards education of the gowalas, the results to be obtained will of course vary very much according to the individuals or classes.

In some cases it would be quite useless to attempt teaching; for instance, with people such as I saw at certain cow sheds (!) in Entally, and who are simply engaged in poisoning the community; but in others I think a good deal could be done. Some of the gowalas I saw in (I think) Goalapara, when with Mr. M. N. Sen, struck me as likely to respond somewhat, *provided the teaching was backed by authority*. Without that, of course, it is useless, as the experience of all countries shows. In fact a request for "teaching first" is, in England and elsewhere, *the* way of escape for the man who has a dirty cow house, and no intention of improving it.

Teaching unbacked by authority useless.

The following from Savage (Milk and the Public Health, 1912) is pertinent:—

"The idea that the average cowkeeper will of his own accord, and without outside pressure, supply a clean milk instead of a manure-laden one, cannot be seriously entertained by those who have extensively discussed this matter with him. The writer has met with a few cowkeepers who could be moved along the way of sanitary cleanliness as regards their cows by gentle suasion and the light of sweet reason, but very few compared with the number who regarded real cleanliness precautions as a silly fad. The great majority take refuge in the following argument in turn: first, that they do take all necessary steps, and that practically nothing does get into the milk. Confronted with milkers' filthy hands, and with still filthier cows, they abandon this argument for the next, which is, that if anything does get into the milk the strainer removes it all. Strainer, with much gross manurial filth removed by it from the milk, produced in triumphant confirmation. With the significance of this explained to them they fall back upon their final plea, that perhaps manure does get into the milk, but it does not matter and they milk like their fathers before them, and what was good enough for their fathers is good enough for them. The latter may be a true statement, but, as the writer explains to them is not the point, which is whether it is good enough for the milk consumer who may not desire what their and his father had. Their fathers had a heavy incidence of infectious disease, a heavy tuberculosis mortality, and always a high death-rate. These are not good enough to-day."

(vi) Even with teaching, and every assistance, it will take years to get all milk sufficiently free from such contamination by dung, dust and other dirt as to be fit for consumption as it is; until then, it should, in my opinion, be subjected to a cleansing process, before sale. It will be many *more* years before we can be fairly sure of a supply free from organisms of infectious disease. To destroy the pathogenic

Cleansing of milk
necessary pending im-
provement.

germs present, the milk should be pasteurized and cooled under supervision.

If these measures are provided, then, with improvement on the cow-keeping side, we shall be able to claim that it is at least in the power of any individual, to get safe milk. If he or she insists on re-contaminating it afterwards, that is beyond our control, (but even in this, there is much to be done by education.)

(vii) Now as to the method of getting these processes carried out :

My proposal is that the Corporation should establish at as many places as necessary, to serve the population, **Municipal Milk Markets, or Milk Shops.**

As to these markets it seems hopeless to look to private enterprise to put them up, nor if private enterprise came forward, could they be sufficiently controlled perhaps, whether as to design, the use to which put, or the cleanliness maintained.

Moreover the Municipality will not lose money in this case. The vendors already pay market fees, and could pay them equally to the Municipal Market. My idea of such a market is an enclosed paved yard, round the sides of which are stalls, each occupied by one milk vendor. There is one entrance, on one side of which is the room or rooms containing the cleansing apparatus, and also facilities for testing, etc. of milk.

If it is arranged that all milk *must* be sold in places appointed by the Corporation, *i. e.*, these markets, then each man bringing his milk would hand over the vessels containing it, and stand by while it was strained, pasteurized, filtered, centrifugalised and cooled. After the last, it would be run into a vessel having a tap and a lid, the latter would be put on and sealed, and the owner would pass on to his stall, from where he would sell his milk by drawing the required quantities through

the tap at the bottom. In this way the milk would not again be open to the entry of any thing from the air or otherwise, until placed in the customer's vessel.

One would hope that it would also be possible to induce the vendor to put on clean clothes, or overalls, which he could remove on departing again. In a selected locality, where people who would appreciate that sort of thing, may live, their milk could be bottled and sealed on coming off the cooler. I do not know what percentage of the milk sellers' takings the market fees now paid represent, (I think the Food Inspector at the Baithakkhana market could probably say), but I should be surprised if the above service could not be rendered by the Municipality at as low a cost as those fees now amount to. In such a case the Municipality, unlike the private owner, is not looking for gain, over and above actual cost.

I do not think it would be necessary to provide every market with this cleansing apparatus, but only those commanding the avenue of approach of the milk. For instance, a market equipped as suggested at or near the Baithakkhana would command all the milk arriving at Sealdah Station, and besides cleaning the supply for local buyers, could also clean and put into closed cans a supply for some other market, if coming in by Eastern Bengal State Railway. The filled cans would be sent off to the market at a distance in Municipal vehicles.

It would be easily seen that such markets provide great advantages in the matter of controlling adulteration. As the milk passes through the process mentioned, what is known as a "drip sample" would be taken, of each owner's (or of as many as desired) milk, and put through the testing machine; as it is a very quick process, by the time the man got to his stall in many cases, the precise quality of his milk would be known. If found not good, he could, according to your powers and adopted practice, have his milk seized and condemned, be prosecuted, have his license cancelled, be warned, etc.

Markets assist in controlling adulteration.

(viii) It is well to consider what objections are likely to be made to this proposal; opposition of some sort is, of course, certain from the milkmen; it will be obvious to them that, irrespective of the law on the subject, adulteration will be exposed by the examination to which the milk will be subjected; then they will not like having to conform to simple rules regarding cleanliness, if this involves any change in previous habits. They will not, however, bring these forward but allege others, chief of which will probably be a fear of exactions by the staff in charge of the market. (That is not to say such complaints could not arise from genuine cause; of course the organisation must be such as will detect or prevent that sort of thing.)

Then they will attempt to say the process injures the milk, etc.

Of reasonable objections, other than their dislike of disturbance which is very natural, I can think of none. There may be some executive difficulties, however, in getting the people to bring the milk to these markets, even when sale elsewhere is prohibited.

In the case of the mofussil supply, that difficulty will not arise, as it will be easy to see the milk across from station to market, but in the case of gowalas in Goalapara and other parts, there may be trouble in preventing evasions. I think that must be faced, and as there is a record of the names of men licensed, at the worst they could dispose of only a part of their production elsewhere. I think, myself, that the public would shortly so much appreciate the milk in the markets, that the gowalas would find that sales at house doors and in the streets could only be effected at a lower price.

If the idea of these markets is favourably received, estimates of cost will be needed; that is a matter of detail, however, which can be worked out separately.

(ix) Before leaving this subject, I wish to make it quite clear that no cleansing process is sufficient in itself to meet the requirements of the case.

Prevention is invariably preferable to cure, but that apart, an absolutely complete cure, which would mean treatment by great heat for prolonged periods, is not practicable without serious attendant disadvantages. The process I describe is free from those disadvantages, but the straining and filtering cannot remove all the dirt, the centrifugalization will not remove all that remains, the pasteurizing destroys pathogenic germs but not spore bearing bacteria, the cooling enables the milk to keep, but it may still become unwholesome, and so on. Therefore milk must be not only cleaned, but produced under better conditions also than now obtain. While those conditions are being obtained, however, we must try and protect the population.

The Corporation Special Committee recognized that it would not do to depend on sterilizing, or pasteurizing only, and I cordially agree, but first I am compelled to differ from the Committee as to the usefulness of leaving pasteurizing to private enterprise, and secondly the frightfully dirty state of Calcutta milk necessitates mechanical cleaning as well as pasteurizing and cooling.

(x) In regard to the eventual obtaining of the whole city milk supply from the country, it is as well to allay the fears of Indians who value the present system, because they can—as they think—obtain fresh milk at any hour of the day, and they look upon that as an important point.

The answer is that under these proposals the milk would be quite fresh, and scientifically speaking fresher than now.

At present on sending to the market for fresh milk, the consumer may get milk of any age, from 2 hours to 10, or possibly more, though the latter is unlikely, as very little of this milk will keep longer unboiled, but the purchaser has no

means of distinguishing between the 2 hour and the 10 hour while in milk of say 8 hours' age, the putrefactive process has advanced a long way owing to the dirt in it.

Milk treated as intended in the proposed markets, however, is in every way fresh and sweet up to fully 24 hours, and would actually arrive at the market probably within 5 hours of milking. No one need fear any want of freshness in such milk.

(xi) There is now the matter of conservation of the city milch cattle, and prevention of slaughter, in which several members of the Corporation have interested themselves. With this is bound up the matter of cheaper milk. Dearness of milk in Calcutta arises from the following causes:—

Preservation of cattle from slaughter.

(a) High rents, rates and taxes.

(b) High cost of cattle and high mortality or wastage in them.

Purchased foods are not dear; on the contrary, the position of the gowalas is rather favourable. In fact I have before now conveyed foodstuffs from Calcutta all the way to Allahabad, for the Government Dairy Cattle, and at Allahabad we can sell milk at a profit at $3\frac{1}{2}$ annas a seer.

The matter of high rent, rates, etc., would be cured by our proposals to move the gowalas out to the country. The heavy wastage in the cattle, it has been proposed to cure by getting hold of certain areas of land, more or less in the vicinity of Calcutta, on which the gowalas could graze their cattle, while giving them some small additional food, from the time they go dry to the time they calve again and return to the milking shed.

Proposal to provide grazing lands.

The idea is very sound, at bottom, but it is necessary to see exactly what is involved in the proposals made.

There are supposed to be 8,000 cows in Calcutta. If it is invariably the custom of the gowalas to sell a cow, when dry, to the butchers, than once a year 8,000 fresh cows must be purchased, and 8,000 dry cows passed to the butchers.

It is impossible that anything approaching this occurs. Nevertheless there are doubtless large numbers sent for slaughter, which might be preserved, and I imagine a good many die which in better surroundings would have lived.

We will suppose that the number is 3,000.

There appears to have been an idea that large numbers of cattle can be grazed on a small area. The finest grazing for dairy cattle in the world noted among agriculturalists is to be found in one of the British Colonies.

Small areas grazing
land insufficient.

I am personally acquainted with this land, and even there a good farm carries one milking cow per acre.

Therefore, if we desire to keep the cows by grazing only and we take the best pasture in the world, we shall require 3,000 acres, a project of some magnitude, financially especially, if the land is bought fairly near Calcutta.

But our land is by no means the best grazing in the world. If one could take the Calcutta Maidan, which apparently is green and growing all the year round, probably $1\frac{1}{4}$ acres would keep a cow in good condition, but I question if much similar grass land can be found in the mofussil, or even land susceptible of being brought into similar condition, so that for grazing alone to support the cattle, 2 acres and upwards per head might be needed.

Of course people do not intend the cow to live on grazing alone, they propose that she should have sufficient grazing to permit of additional light feeding keeping her in condition.

This is quite feasible, and one acre per head would be sufficient, if of a fair class, but after allowing for the cost of feeding and for securing such land as would be needed, as an economic proposal, I cannot say that I have much faith in it, if attempted in the close vicinity of Calcutta, while if it is *not* accompanied by removal of the gowalas from Calcutta, in my opinion the plan cannot possibly achieve the end in view.

Land in vicinity of cattle impracticable.

My experience of cattle in this country (that is 13 years) with large numbers, running into thousands, shows that indigenous breeds have a predisposition to produce young infrequently; when, in addition, these cattle are stall-fed, never allowed out of their sheds and fed purely to induce the largest possible flow of milk, the average time that elapses between two calves becomes very long indeed. What usually happens, in such conditions as exist in the cattle sheds of Calcutta, is that the cow will not breed again until, not only has she gone dry, but has had time thereafter for her natural bodily functions to resume their sway. Fifty per cent. will take fully 6 months to recover, and a not inconsiderable proportion even 12 months. Then they breed again. But a cow which has to be kept one year or even two before she calves again, is a doubtful commercial venture if she has to be fed even a little in addition to grazing.

Cows take time to recover from unnatural conditions in city.

Moreover the custom of this country is to underfeed the dry cow, which aggravates the tendency to long rests.

It is the characteristic defect of cattle keeping throughout India. The milking cattle are well done, as a rule, the dry cattle abominably. Apart from the above, we have a further serious difficulty, *viz.*, the practice of "*phooka*" so frequently alluded to in the papers. In my opinion this is *insuperable* under present conditions.

Practice resulting in sterility.

So long as the gowalas keep their cows where they are, they *must* have a very heavy mortality among the calves, irrespective of sale, and I do not believe that, in that case, anything will stop the practice. The disastrous effects are well known, and a body of philanthropists who establish such a farm would be disappointed to find a great majority of the cattle incapable of breeding again altogether.

I observe that it is commonly held that the calves are sold. No doubt a number are sold, and different classes of milk men will vary in their practice in this respect, but personally I doubt very much if there is so extensive a sale of calves as certain gentlemen have supposed.

Then the last difficulty; these gowalas do not keep bulls, and assuming that they did not resort "*phooka*," that they fed their cows when dry, took them out for exercise or to graze on the maidan when in milk, etc., still no appreciable number will be in calf when they go dry. It is of course a very simple matter to provide bulls (if the gowalas would feed them), but the conditions existing show it to be useless at present. In short, I consider that as long as the cattle remain where they are, it would be waste of money to take up an area of land for grazing the dry or to adopt any of the measures that have been suggested.

But if the gowalas move to the country, it is another matter. For more calves will live, the cows will exist under more natural conditions, there will be less of objectionable practices, then a grazing farm becomes worth while.

True friends of the movement, therefore, and all who are interested in preventing the destruction of milch cattle, cannot do better than support any measure designed to get the cattle away to their natural habit, *viz.*, the open country.

Then comes the question how to work such grazing grounds. It will be of no use to hire or buy a block of land, and say to the gowalas, "Turn your cows out there." There must be supervision to prevent trespass by local cattle; there is sure to be work necessary, for some years, in keeping down weeds, etc., so that in my opinion it would be best to attach it in the first place to the Municipal Dairy.

(xii) One must retain, however, a realization of what is required if the matter is dealt with comprehensively.

Even on a basis of 3,000 animals to be provided for, it would be most unwise to put them all on to one ground. The risk from contagious disease would be too great. If ground for say 500 animals were provided, at a certain place, and found a success, another ground for a similar number might then be provided a few miles in another direction. Other grounds would have to be established in separate localities, as, if the policy of moving the gowalas out of the city is adopted, and succeeds, they cannot all go to one district, but if land is acquired for taking the gowalas to, which will provide grazing for their milking cattle, the land for the dry cattle should, as a matter of economic farming, be provided with it, and probably this could be arranged. I may say that a scheme of giving land far removed from where the gowala lives with his milking stock, to which he is to send his dry cows, does not impress me as likely to be very satisfactory. True it corresponds with the practice of village communities in certain parts of the country, but the gowala has not the other advantages of the villager, and has to get a much higher efficiency in milk production than is sufficient for village cattle.

Cows living under the conditions outlined should last much longer than they do now, and increase and multiply, and there would be a market for the male calves amongst the surrounding cultivators.

(xiii) I am satisfied this scheme would have more effect in lowering prime cost than any other measures that could be devised. It is evident, however, that the question of preservation of the milch cattle concerns more than the Calcutta milk supply, and it is really a matter for the Government to take up. It would be advisable for the Agricultural Department of the Government of Bengal to be consulted on this subject, and also on that of the Municipal Dairy I suggest.

Moving cattle to country should reduce cost of milk.

As to the latter, the Government would perhaps wish to educate other cities besides Calcutta, and so might join in, or undertake, the establishment of an officially managed Dairy Farm.

(xiv) In regard to this matter of a Municipal Dairy Farm, I wish to make it quite clear that I do not recommend Municipal Dairies as the ordinary means of providing the city with pure and safe milk. No doubt such dairies would meet the requirements of the case very satisfactorily, but people who recommend that as the sole or main remedy fail to realize the magnitude of the problem.

Municipal Dairy Farm not approved.

If, as is stated, that portion of the present milk supply, which comes from inside the city, is the product of 8,000 cows in milk it is not one but 16 or 20 Dairy Farms the Corporation would have to establish, each with a capital of some three lakhs of rupees.

The Corporation Special Committee recognised this, and reported against the idea for this reason.

I agree in principle; the easy thing for any expert called in, in a case of this sort, is to say: "Establish your own Dairy Farms, here are plans, estimates, etc., and specimen accounts showing that it can be made to pay." and I am fully alive to the importance of guarding the Corporation against establishing anything in the nature of an experiment or which later may be found a white elephant.

The Military Department has had a good deal of experience of experiments now, and I dare say Municipal experience could furnish instances of the other.

But though I do not recommend Municipal Dairying on a large scale, I find it impossible to frame a fully satisfactory scheme, without something to act as a lever in inducing action, and as an example showing the way. Hence my suggestion of one Dairy Farm.

Still looking to the protection of the Corporation, I contemplate that one being of a size which, should the whole of the scheme fail through bad management, will permit of it still performing a useful service to the community.

In saying this, what I have in mind, is the milk supply of public institutions in Calcutta, hospitals, jails etc. These consume a lot of milk, and it is safe to say they now get an inferior quality. The Municipal (or Government, should the Government take it up) dairy, if or when found no longer necessary, could then be devoted to meeting the requirements of those institutions, unless private dairy farms were to lease it from the Corporation as would be likely.

Similarly, I do not contemplate dairy farming by the Corporation or by Government in perpetuity. My idea is somewhat as follows :—

You establish your farm on, say 1,000 acres of land 50 miles from Calcutta, (a suitable locality is a matter for further enquiry, in consultation with the Agricultural Department of Government), and put on 200 cows in milk. You already have your Municipal milk markets. The 30 maunds or so of milk from these cattle would be sent in to the market, serving the division of the city in which the present cow keeping conditions are worst.

This must, I think, create a surplus of supply over demand in that locality, which would naturally tend to make some men

move to other parts; at the same time you invite the gowalas affected to take their cattle to your farm, there to build their own sheds, to your plans, if they so desire, or to have sheds built for them.

In either of these cases grazing rights, etc., to be given, the whole on moderate terms.

At some stage, when you had got enough men together, you would cease building more sheds for them, or letting them build, and would make over your own sheds gradually giving up cattle ownership. Then, as to their milk, they optionally send it into town themselves, or send it through the Municipal Dairy management, or perhaps even sell it to the Municipal Dairy.

I need not go into the matter in further detail here; of course the idea needs careful elaboration, but I consider it workable, and it is the natural and easy way, by which the Municipal dairying would be a temporary arrangement.

3. Next we have to consider the mofussil supply which comes in by train.

It has already been said that the Corporation must have power to inspect and license, and then to prohibit the entry of milk not complying with conditions laid down.

Considerable further investigation is needed, however, before one could make detailed recommendations, to show the precise nature of the sanitary conditions under which the milk is produced and conveyed to the railway, the extent of the supply, in whose hands it is, i.e., of the producers or of middlemen who buy from the actual producers, etc., etc.

Importance of the
mofussil supply.

This side of the question is fully as
important as, if not more important than,
the other.

The difference between it and the city gowalas' milks is that whereas you could never do away with the mofussil supply no matter how bad the sanitary conditions found, because the city gowalas' production could not expand to replace it, the

mofussil supply could increase if the city gowalas preferred to go out of business rather than respond to the influences brought to bear on them.

The mofussil supply is, therefore, one to foster and improve. Village cattle, though not provided with paved floors, and that sort of thing, are usually kept in fairly cleanly and healthy surroundings, and, if Northern India is any guide, there milk is of considerably better quality from a sanitary point of view than the product of city cow-sheds. However, whatever the actual details, the sanitary conditions are certain to be found bad, and a movement towards improvement cannot achieve *great* success for very many years, hence the cleansing and pasteurizing process is equally or more needed. In this case fortunately it is easy of application to the whole of the supply, if the necessary appliances, etc., are established at or very near the 2 or 3 points, at which the milk leaves the railway on arrival. The bacteriological investigation is required equally in the case of this milk, especially of samples taken at the place of origin.

4. Last as to the extra suburban supply, certain requirements are sufficiently indicated by the remark on the defects in part I. It will be necessary to apply a carefully organized system of inspection, and if that is done and the milk compelled to pass through the Municipal Markets, and their cleansing rooms, I think it will be fairly satisfactory. Bacteriological examination at intervals will be of great value and powers to shut out milk of a given owner or from given premises, must be unhesitatingly used.

5. In regard to the milk markets and cleaning under Municipal supervision, certain exemptions would probably have to be granted.

I refer to dairies, which appear to be all in the suburbs or outside them which now run a house to house delivery—they supply the European and Anglo-Indian population almost entirely, I think.

The best of these already comply with most of the conditions I recommend to be enforced, and could easily comply with all, in one case every possible reasonable requirement appears to be met (Mr. Keventer's Dairy beyond Ballygunge). In such cases certificates of exemption from bringing the milk to the Municipal Markets would be given, revocable at any time of course.

In the case of a dairy making a house to house supply, and not complying with the conditions laid down, you could either compel the milk to come to the Market and prevent it from leaving there again for sale, or allow it to come to the market to pass through the process and be put into sealed vessels in which it would have to be conveyed to the consumers.

It is, of course, understood that there are two sets of conditions, one with which every one has to comply in order to be allowed to deal in milk at all, the other which must be complied with if it is desired to sell the milk elsewhere than in the market.

I confess I saw very few places which I could have thought fit for a certificate of exemption, but there are several which, at small trouble and expense, could be fitted for it.

6. The foregoing covers the whole ground leaving certain points for further enquiry. I have dealt with the case at much greater length than would have been necessary, if I had known that the enquiry would be concluded by myself, but that being doubtful, I have taken the matter far enough to enable the Corporation to consider the broad issues. The further investigation recommended, though necessary, is concerned only with detail.

A *summary* of the points for further investigation is as follows:—

(1) In consultation with Agricultural Department—

(a) as to the practicability of finding a suitable place for establishing a Municipal Dairy Farm, and, either separately

or in conjunction with the former, a place or places suited for grazing farms for dry cattle. A good judge of "country" (agriculturally speaking) should examine the land at three seasons, once in August or September, once in December, and again in March, so as to judge its grazing capabilities ;

(b) as to the existence of any considerable supply of milk within a radius of 200 miles of Calcutta, and adjacent to a line of railway, not now tapped by any large trade ;

(c) as to any other measures, that the Agricultural Department can take, or assist in, for the purpose of conserving the milch cattle in Calcutta, and in general.

(2) To investigate the conditions under which mofussil milk is produced.

(3) The extra suburban gowalas, the sanitary conditions of their sheds, whether they can be improved, and what steps would be necessary. What steps will be necessary to control the milk as it enters the city area, so that milk from places not licensed, shall not come in as the product of those places which have submitted themselves to license and inspection.

(4) The bacteriological state of the Calcutta milk supply at various stages, from production to consumption.

I do not know who is to undertake these investigations.

At present I am fully engaged with my present charge, which is a very heavy one, and while that is the case, it is quite impossible for me to undertake it. Some of the work can be well done by Municipal employees detailed to assist the Officer in charge of the investigation, but, in my opinion, expert knowledge of dairying in general, coupled with a considerable knowledge of Indian conditions, is necessary in the person conducting or superintending the investigation. Such qualifications are very difficult to obtain as the Military Department is the only one which so far has done appreciable work in the matter. If it is desired that I should undertake it, that would have to be arranged with Army Head Quarters.

Eventually, if this report is approved, there will arise another problem, viz., the staff for arranging and managing everything. As, however, it will be some time before much is needed in this way, it might be possible to work in with either the Military Farms Department, or the Civil Agricultural Department getting either to increase its strength, and second the men needed.

I think the length of time required for the investigation mentioned—provided arrangements were made beforehand for officers concerned, such as of the Agricultural Department and Health Department of the Corporation, to consult, would be at least a month, not necessarily all in one however, and in any case the enquiry could not be finally completed as to details until next March assuming it is gone on with not later than September this year.

It is for consideration if the Corporation might not decide now :

(a) if to ask for the legal powers mentioned (so far as not already held) ;

(b) if they will undertake to provide, equip and staff the markets mentioned.

(c) Ditto as to the Municipal Dairy Farm.

A *summary* of my recommendations is :—

(1) Obtain necessary legal powers.

(2) Establish markets in which all milk must be examined and sold.

(3) Provide appliances for cleansing milk and pasteurizing it, and put all milk through these.

(4) Provide land at a distance from Calcutta to which the City gowalas can go, then take all reasonable steps to move them out of the city.

(5) Establish your own Dairy farm to make a start on better lines, and to assist and control the settlement of City gowalas in the country and the fostering of production of milk by farmers.

PART III.

Finally I have to consider what I can suggest in the event of the Corporation thinking the proposals impracticable.

(i) If the Municipal Dairy is not accepted, but only the removal of gowalas from the city proceeded with, the Corporation providing land first, it would be necessary to provide some organization to see to settling them on the land, etc. Then, if the land were on the line of rail, and within about 50—60 miles, the milk would probably reach Calcutta in good condition, and still be fit to be put through the cleansing process at the market should these have been established.

If, however, the land were to be obtained further away, some one, either Municipality or private enterprise would have to provide machinery for pasteurizing and cooling the milk *before* despatch.

(ii) If the removal of the gowalas should be given up entirely, then the only thing is to compel them to build much better sheds, and enforce cleaner habits. As to sheds, I attach a drawing of a shed which would reasonably meet requirements, having regard to the climate. To compel the use of such sheds in Calcutta, however, simply means the closing up of a large proportion of the existing yards for want of room.

The result would be that the dispossessed gowalas would move as far as was necessary to get enough room, or to where they had more chance of evading the rules, most likely just beyond the suburbs.

A number of the sheds are, however, susceptible of improvement, and I would suggest the Corporation might contribute towards the cost of widening and improving them as needed. (Indeed this might be done to some extent even with full acceptance of my proposals, as at the best it must be many years before the last gowala disappears from Calcutta).

The cost would not be high from the point of view of the Corporation, but would be heavy to the gowala, as eventually it must be lost if he goes, while if he stays he must look to recompense from increased takings, which must equally come out of the pockets of the inhabitants.

Should it be decided to keep the gowalas in the city, in the above lines, then I still recommend the milk markets and the cleansing process; in fact without them I see little utility in doing anything. I cannot imagine an inspectional staff strong enough to control adulteration otherwise.

If the markets are used, there is still difficulty in preventing sale elsewhere, but there is no impossibility about it or in obtaining a reasonably good supply from the City gowalas, with their improved sheds, etc., provided the public will pay the price.

Even if the Corporation meet the cost of improving sheds allowed to remain, a substantial rise in the price would be inevitable, and some increased shortage in supply. The scheme, I have proposed, appears to me the only way of getting good milk without a reduction in supply or an increase in price.

APPENDIX I.

Statement showing the rates for carriage of milk and return of empty cans by passenger train, as agreed to by the E. I., G. I. P., B. B. and C. I. and N. W. Railways.

Distances.		Rate per maund for milk in cans.			Rate per maund for return of empty cans.		
		Rs.	A.	P.	Rs.	A.	P.
Not exceeding 25 miles	...	0	2	0	0	2	0
Exceeding 25 miles, but not exceeding 50 miles	...	0	3	0	0	2	0
" " 50 " " 75	"	0	4	0	0	2	0
" " 75 " " 100	"	0	5	0	0	2	0
" " 100 " " 150	"	0	6	0	0	3	0
" " 150 " " 200	"	0	7	0	0	4	0
" " 200 " " 250	"	0	8	0	0	4	0
" " 250 " " 300	"	0	9	0	0	5	0
" " 300 " " 350	"	0	10	0	0	5	0

Madras Health Lectures.

INTRODUCTORY LECTURE.

[BY THE HON'BLE SURGEON-GENERAL W. B. BANNERMAN,
C.S.I., K.H.P., M.D., D.SC., I.M.S., SURGEON-
GENERAL WITH THE GOVERNMENT OF MADRAS.]

THE title chosen by His Excellency for this lecture is “Why don't you keep well?”—a pertinent query certainly, and one to which it is often difficult to supply an answer. But I believe, before the end of the lecture some of my hearers may be inclined to ask “How is it that we are not ill all the time?” For I intend to describe to you just a few of the many dangers to our health that lie around us here in India, and which it must be our endeavour to avoid if we are to retain our good health.

Now what is disease?

In India, which is a country largely ruled by ancient tradition, and only gradually opening up to the light of modern scientific knowledge, the answers you will receive may be something as follows :— “Disease is a visitation of the gods or perhaps of demons and evil spirits, and as such a thing to be avoided and the sender propitiated by offerings to the deity, or expelled from the village by terrifying noises such as the blowing of cholera horns, the beating of tom-toms or the rattling of kerosine tins.” You have all heard this I am sure. That these ideas would be prevalent in India is merely one proof of many that could be given, that modern science is not yet known to, or accepted by, the common people. The same ideas were prevalent not so many centuries ago in the western world, and they have their roots in ignorance of the constitution of the human body, and the wonderful ways in which life is conducted in it and its surroundings, ignorance which has only recently been dispelled by the discoveries of modern scientists.

Now what is the human body made of ?

It was only about the year 1830 that the compound microscope became a trustworthy instrument, and it is therefore only within the last 85 years that investigators have been able to see what our bodies are really made of and to get an idea, however elementary, of how they work. Since then, it has been possible to show that our bodies so complicated in appearance and structure are really composed of a collection of minute particles called cells. Now these cells that make up our elaborate bodies, are fashioned after the pattern of the simplest of living organisms, the one-celled animals,—the protozoa, the amœbæ. It has further been shown that each of these cells is able to produce other cells and the discoverers of these wonders laid down the well known law "*Omnis cellula e cellula*," every cell comes from a cell. This was a very wonderful and revolutionary discovery and it has had far reaching effects. It showed that man was not a single being but that he was made up of a whole army of little beings, each endowed with independent life, lending its own existence, feeding, growing, multiplying, dying; and yet each one dependent on the exertions of its neighbours for food, and doing its part in supplying food and nourishment to some other set of cells in another part of the body. Man is made up of a collection of living things and has been in fact called a "menagerie". As a recent author says of these discoveries, "All living creatures whether roses or reptiles, microbes or men were shown to be either single cells or colonies of cells, and all cells were shown to be composed of the same material "protoplasm." King and cabbage were found to be both made of cells, and the cells in both cases were found to be made of identical stuff. Shakespeare had said that we are of such stuff as dreams were made of; Virchow (founder of the cellular pathology) "proved that we are also of such stuff as worms are made of".

But there is more in this discovery than that. From one invisible cell, by a process of multiplication and arrangement

the wonderful body of man is made. The one cell has not produced its like merely ; it has produced cells of all sorts and shapes so arranged as to form the body of man which is so familiar to us. "Sir James Paget considered the development of ova through multiplication and division of their cells, as the greatest truth in physiology, and certainly it is the most wonderful. Picture it! Two cells, microscopic particles of protoplasm, so frail that a little sunshine or a trace of carbolic will slay them, meet, and lo! in the meeting a miracle is wrought: they blend into one and the one cell multiplies in a mysterious way, and becomes a man with an immortal soul. Two other cells, likewise microscopic particles of protoplasm, made of exactly the same material meet and blend, and lo! a lily!"

But a man's body is not only composed of fixed cells joined to one another to form bone, flesh, brain, digestive organs and so forth; it likewise contains millions of free single cells which lead an independent existence. A few wander about among the tissues, but millions circulate in the blood. Some of these cells are red and others are white.

All this variety of cells in one body, and descended from one original cell, is very remarkable, but stranger and more wonderful still is the fact that not only do they come to differ in appearance, and in their composition and chemical characters, but likewise in the effects they produce, and also that each cell is dependent for its health and very existence on the work of some other cell perhaps several feet away from it. Thus the cells of the skin of the toes are dependent for health and life on the cells of the spinal cord. The cells of the stomach give out digestive juice, which is useful in preparing the food we eat for the nourishment of other cells of the body. At the same time they pass on into the blood their leavings; these are carried to other cells for which they serve as food. Thus no cell lives for itself alone but also for the good of others. The body then is like a well managed commonwealth where all are working together, not for themselves alone, but also for

the benefit of the community. To quote Macaulay, we may compare the body and its cells to the state of Rome in the "brave days of old."

"Then none was for a party
But all were for the State,
Then the great man helped the poor,
And the poor man loved the great".

But what of the roving cells of the blood, and what relation has this rushing red river to the cell community. All life long the heart propels this red river through its leathery gates along the arteries, capillaries and veins, and the cells of the body are bathed by its fluid. This important river contains "partly liquid food and partly sewage. It is like a great river that carries merchantships freighted with provisions and transports filled with soldiers, and barges laden with coal and dredgers laden with mud. In its currents it bears the red and white blood-cells, great quantities of waste material, and great quantities of food and fuel. Never was a river so busy, and yet there is no confusion, and no mistake; each cargo goes to the right port, and we, whose conscious life depends on the traffic, know nothing of it, save, perhaps, when shame reddens the cheek, or when fear blanches it, or when some great emotion makes the heart leap."

"There are only about 10 pints of blood in the whole body, and yet, in the course of a year, its red currents carry not less," says Lewes, "than three thousand pounds weight of nutritive material to the various tissues, and three thousand pounds weight of wasted material from the tissues—salts and metals and gases and albumins and many other substances".

The answer to our question "What is disease?" may be given as "cellular disorder, a rebellion among the cells, or an invasion of the cells by enemy cells."

These enemy cells are the bacteria or microbes as we doctors call them.

Now what are microbes ?

The word microbe means literally a small, living creature.

At the very bottom of the scale of living things, there exists a group of beings so small that one cannot see them without the aid of a powerful microscope, and so simple that they consist of a single cell like the amoeba which I have described to you. It would take 25,000 of some of them placed side by side to measure one inch. These small living things are so simple in structure and composition that it is difficult to say whether they are animals or vegetables, probably some are the one and some the other.

But if it is difficult to see or classify them, it is quite easy to know that these microbes exist by what they do.

You all know that the largest trees in the jungle are produced from seeds, and that the size of the seed has no apparent relation to the size of the tree grown from it. For instance, the cocoanut or palmyra tree has a very large seed, so large that if it falls on a man it may kill him ; while the great spreading banyan tree has a quite small seed.

Yet both come from a seed.

If we go further down in the vegetable kingdom, we find crops of immense importance growing from very small seeds, for example, paddy or ragi. The further down one goes in the scale, the more quickly does the crop come to maturity.

Now if you are willing to admit that these things with which you are familiar grow from seeds, you will see that there may be even smaller seeds than those banyan tree or ragi plant. You are all quite familiar with the blue mould that grows on boots, and cheese, and all sorts of other objects in the monsoon season.

If you look at this mould with a magnifying glass, you will see that it is really a network of threads from which rise minute stems with round balls on top. You may find some of these balls have split open and inside you can see hundreds of

seeds so small that you cannot see them without a strong magnifying glass. If you sow some of these seeds on moist bread or other suitable soil, they will sprout and produce the tangled threads again from which the small stems arise with the flower-like seed balls on top.

Here is something still smaller than the ragi, the plant of which you can see, but the seed is quite invisible to us until we look at through a lens.

Now perhaps you will be willing to believe that there may be even smaller plants and seeds which you cannot see until a powerful microscope, able to magnify many hundred times, is applied to them. You are all familiar with curdled milk, or 'tyre' (தயி), as it is called, and many of you use this as food. Did it ever occur to you to ask how the milk becomes curdled? You know how tyre is made by taking some curdled milk and putting it into fresh milk. Did it ever strike you that this is just what the ryot does when he takes some of last year's seed and sows it in his fields. Though he does not really understand all that happens, he knows that if he sows grains of rice in his fields he will in due course reap a harvest of rice.

In the same way the housewife knows that if she puts a little good tyre in the fresh milk, in a short time it will all become good tyre also, excellent for feeding her husband and children. Can it be possible that she is also sowing seed and reaping a harvest just as the sower of rice does? Yes! without doubt this is exactly what she does, only she cannot see the seed nor the crop because both are so small, but she sees the effect produced in the milk by this small plant.

The first person who saw these seeds in milk was the great Pasteur who, in the year 1857, separated them from milk, grew them in his laboratory, and proved that they were the cause of the curdling of the milk. He did this by showing them in fresh sterilised milk and seeing the process going on under his own eyes. He *sterilised* the milk, that is to say, he heated it till he knew that any seeds that were in it were dead.

You know if you boil the seeds of ragi or rice they will not grow even if sown in the best soil.

This is an example of a microbe which is so small that you cannot see it, and yet you are all familiar with it from the effect it produced in curdling milk. This process of turning milk sour is called fermentation by scientists. The same sort of thing happens when palm juice turns into toddy, or sugar and malt into beer.

These bacteria, or microbes or germs, are found everywhere; they are in our food, in the air we breathe, in the water we drink, in everything we touch, in the earth in which we are buried. They multiply with amazing rapidity by simply dividing into two, and they divide once in twenty minutes or so. Fortunately for us they cannot go on dividing at this rate owing to lack of food or other adverse circumstances. If they could, one cholera bacillus might, in twenty four hours become 5,000,000,000,000,000,000, five trillions, with a weight of about 7,000 tons! Think of it, to-day a speck of jelly you cannot see, tomorrow a mass equal to the population of a town of 30,000 inhabitants.

Now if a bacterium can divide in this fashion into two bodies of nearly the same size as the original one, it is evident that it must eat up about its own bulk of food in the same time. This power of digesting is of enormous importance in the world, for these bacteria cause chemical changes in their surroundings which are of great value to us. These bacteria take certain things in for food, and give other things out which act on their surroundings. Thus, the great jute industry of Calcutta could not exist without bacteria to digest the cement that keeps the fibres of the plant together. The tanning industry of Madras is dependent on bacteria. The flavour of tobacco is due to fermentation caused by bacteria, and the different tastes of cheese, butter and tea, are likewise due to them. To these microbes we owe the very food we eat. Without microbes there would be famine in the land. For these bacteria break up dead animals and vegetables, and change them so

that they become suitable food for living plants. If these bacteria did not thus feed the plants on which all animals live, everyone would die from want of food.

We can understand that many things that we see happening around us are caused by invisible microbes and may believe that many of the "ills that flesh is heir to" may likewise be due to their bad influence; for if you believe that invisible microbes can turn milk to curd, you can surely also imagine that they may cause a commotion among the cells of the body commonwealth.

It is all very well to say that these microbes can produce disease in man and animals, but can it be proved? Every doctor will tell you it has been proved, and he bases his whole practice on this belief. The first microbe to be convicted of homicide was the bacillus of anthrax. This microbe causes numbers of deaths among cattle in this Presidency, and cases of the disease in man have occurred at Vaniyambadi and other centres of skin trade. The bacillus is like a small rod and grows in long chains. Under the microscope it looks very much like a jointed bamboo. The germs were first seen in 1839 in the blood of sheep which had died of anthrax but for fourteen years no one knew what they were. Then Dr. Davaine in the light of Pasteur's work on sour-milk bacillus, recognised that these rods in the blood were living bacilli, and he infected rabbits with anthrax disease by injecting into their bodies a few drops of blood containing anthrax bacilli. Then Koch discovered how to grow these anthrax bacilli in test tubes in his laboratory and was able to infect rabbits and mice with the disease by injecting a few bacilli from his cultures. Pasteur likewise took up the task of proving that germs and germs only were the cause of this disease. He took a flask of broth and put into it anthrax germs taken from the blood of an animal. He only put in a few germs, but they grew and became many. He took a few germs from this flask and sowed them in another, and he repeated this till he had used fifty flasks. In this way he was sure that nothing remained

in the last flask except anthrax germs. This he called a "pure culture" of anthrax. Of this pure culture he took one drop and injected it into the blood of a rabbit. That rabbit died of anthrax, and in its blood he found many anthrax germs. See what Pasteur had done. He had taken the invisible germs or seeds of anthrax, he had cultivated them in his laboratory until he got a pure crop of seed, he had sowed this seed in the body of an animal which then died of the disease, he had found the same germs in its body as he had put into it. It is just the same process employed year after year by the ryots of Madras. They collect the seeds of ragi or some other crop from their fields, they clean it so as to separate it from all other things from it, they sow it in their fields where it grows and multiplies and produces a crop, from which again they can gather seed. The analogy is surely complete and you must now see that this disease of sheep and cattle called anthrax, is caused by the bacillus which is found in the blood of its victims. You will now understand that any animal in whose blood these anthrax bacilli are found, is ill of anthrax and that it will probably die of that disease. If you admit that, then you must also admit that man can become ill and die of anthrax, for the germs of anthrax can be found in a person suffering from this disease, or recovered from his body after death should he die of anthrax. As I said before, cases of this disease in men have been found in Vaniyambadi and other parts of India.

Now where did these men get the infection of anthrax from? Is it not significant that cases of anthrax should have been reported from Vaniyambadi where there is a large trade in skins. In England there is a disease called "Wool-sorter's disease" which sometimes breaks out at Bradford and other centres of the wool-spinning industry. This disease has been proved to be nothing else than a form of anthrax. The germs of the disease, brought in wool from Russia and other countries where anthrax among sheep and cattle is very common, were breathed into the lungs of the wool-sorters

along with dust given out during the sorting, and cases of anthrax were the result.

Now when Pasteur first announced his discoveries he was met by many opponents who brought up all sorts of arguments to refute this new-fangled doctrine of his that infectious diseases were due to germs and to germs alone.

Pasteur was up against a blank wall of old theories and ignorance, much in the same way that the Health Officer of a town is even in these days, and he aroused just as bitter opposition too.

Is it any wonder that he sometimes lost his temper when arguing with his old fashioned colleagues at the Paris Academy of Medicine? Here is a story as told by Roux the famous disciple of Pasteur. In abscesses and boils one finds a very small round germ which grows in masses, the same germ is found in inflammation of the marrow of bones. Pasteur therefore said that this disease of the marrow was a "boil of the bone." The surgeons of 1878 laughed at this idea. In the fever that sometimes comes after child-birth, the blood clots contain a similiar germ; only it grows in long chains like a string of beads. Pasteur said "this is the cause of infection among women after delivery." One day at the Academy of Medicine in a discussion of the causes of puerperal fever, one of the most famous of the Paris doctors was holding forth eloquently on the many causes of epidemics of fever in lying-in-hospitals, blaming all sorts of imaginary things instead of himself and his dirty hands. Pasteur could stand it no longer and jumping up interrupted him by shouting: "The cause of this disease is nothing of all that; it is the doctor and his attendants who carry microbe from the sick woman to the healthy one"; and when the astonished orator answered that he was much afraid nobody could ever find that microbe, Pasteur rushed to the blackboard and drew on it a chain of the microbe saying "There, that's what it's like." That was how the great Pasteur fought and beat the doctors of the old

school "and by that sort of work he and Lister created what we call modern surgery and a vast amount of sorrow and sighing fled away, and will never come back, Heaven be praised."

But Pasteur had something more to prove before everyone would believe his germ theory of disease, and this was the great law that all life comes from previous life, and cannot arise by itself. The Greeks and Romans believed it could, so did everyone in Europe in the middle ages. They called it Spontaneous Generation.

It is plain that if life can suddenly arise of itself in a dead thing, germs might begin their life by this "spontaneous generation"; and if so then it is no use trying to shut them out of our bodies. An example will perhaps make this clearer. If kerosine oil could go on fire without a spark to start it, of what use would those great tanks on the beach be? But just as the kerosine remains unharmed inside its iron case, so our bodies will remain safe from disease so long as no disease germs are allowed to get in.

Pasteur believed this, and he made countless experiments to prove it. He declared that fermentation, decomposition, putrefaction were caused by germs floating in the air, and he proved that broth might be kept for years unchanged inside a flask, so long as no germs were allowed to reach it. And he proved it. The announcement of this discovery was made by Pasteur in a famous lecture delivered at the Sorbonne in Paris in 1864. "All Paris was there: the huge amphitheatre was filled to overflowing; he showed them his flasks, his sterilised broth: he told them the history of the controversy, told it with quiet grave conviction, and just a little touch of scorn for his adversaries 'There is no condition known to-day in which you can affirm that microscopic beings came into the world without germs, without parents like themselves. They who allege it have been the sport of illusions, of ill-made experiments, vitiated by errors which they have not been able

to perceive, and have not known how to avoid." He concluded his discourse in the following dramatic fashion, pointing to his flasks of broth :—

"I wait, I watch, I question it, begging it to recommence for me the beautiful spectacle of the first creation. But it is dumb-dumb ever since these experiments were begun several years ago; it is dumb because I have kept it from the only thing which man cannot produce—from the germs which float in the air, from life; for life is a germ, and a germ is a life. Never will the doctrine of spontaneous generation recover from the mortal blow of this simple experiment". Let us consider why having been attacked by germs we do not always die of the disease caused by these germs.

It is common knowledge that people who have once suffered from an attack of an infectious disease such as small-pox, typhoid or scarlet fever, do not as a rule have a second attack of the same illness. The doctors will tell you that such a person has become "immune" to that disease. Now how does nature produce this immunity? It is certain that some change has taken place in the body which makes it an unsuitable place for the bacteria of that disease to grow in.

The blood contains two kinds of floating bodies, the red bodies and the white ones. Now these white cells are of several different kinds, and do different kinds of useful work in the body. One kind is very like the amoeba, for it can change its shape and crawl about on the walls of the blood vessels, and can even creep through the walls and wander about among the cells of the body. Metchnikoff, the famous Russian scientist, now on the staff of the Pasteur Institute, made careful investigations into the doings of these white blood cells and he found out some very wonderful things about them. He saw that they not only moved, but that in moving they were able to take into their insides, small things they met with. He put in their way bits of Chinese ink and other strange things, and they took them in. He experimented with a small

transparent animal called a daphnia so that he could see what was taking place inside it. He injected into its body the spores of a fungus and he found that the white blood cells of the daphnia ate up the spores and prevented their injuring it. Then he found that the white blood cells of animals such as sheep and cattle could in the same way eat up and digest the bacteria of anthrax and other diseases. He therefore announced that these white cells, which he called phagocytes or cell-eaters, were the defenders of the body from invasions of bacteria.

As long as this army of white cells did its duty, no bacteria could remain in the body to injure it.

This was no doubt a very fascinating theory, but it did not explain all cases.

It was found that in some diseases the disease germs were not destroyed by the white cells, but were killed by the watery part of the blood and that after an attack of illness caused by bacteria there appeared in the watery part of the blood certain things that prevented bacteria from growing.

Where did these things come from ?

Probably they are made by some of the different kinds of white cells of the body, but this is not quite certain. Within the last few years Sir Almroth Wright has brought forward a new theory, that the blood contains a substance which prepares the bacteria for the eating of the white cells. He calls these things "Opsonins" from the Greek verb meaning to season or "to prepare food for". By a long series of most ingenious and beautiful experiments he proved that the white cells by themselves were not able to eat up bacteria, but if opsonins were present in the serum they would do so eagerly. These opsonins were in fact like good cooks who tempt the appetites of their employers by making savoury dishes for them.

Where these opsonins are made no one has yet discovered, but some day we shall know.

In the meantime, however, we know how to make the body produce those opsonins and so can protect it against the attacks of disease germs.

When a person has recovered from an infectious disease, the cells of his body have made opsonins, by the help of which the white cells eat up the germs of that disease at once, and so prevent them doing harm.

To make the matter quite clear, let me put the case this way.

Bacteria in the body do not harm it on account of their actual presence. The harm they do is caused by the poison they produce in the course of their life. This poison injures the body just as any other poison, such as arsenic, for instance, does. The body however resents the presence of this poison, and proceeds to fight against it by producing an antidote to it. The struggle of the body against this poison produced disturbance among the cells of the body commonwealth, which is shown by fever and other signs and symptoms of disease. If time and strength are granted, the body produces enough antidote to destroy the poison of the bacteria, and the patient recovers. The recovered person still has the power of producing this antidote, so any fresh germs are at once killed by it and no second illness will arise. The person has become immune.

Can we imitate nature in this matter? Can we make immune? Yes, we can. We can catch the bacteria of disease and grow them in our laboratories and keep them alive until they have made enough poison for our purpose. We can then kill them by heat or antiseptics and so prepare a mixture of dead bacteria and their poisons.

The bacteria being dead cannot make any more poison, and the poison being a lifeless chemical substance cannot increase in amount. If then we take this lifeless preparation and put a little into the body, the body will react to it and produce the required antidote. The body is thus prepared to

defend itself against the disease caused by these special germs without the inconvenience and danger of an actual attack of the disease itself. It was in such ways that Pasteur was able to protect the sheep of France against anthrax, and fowls against chicken-cholera, and it was he who called all such preparation "vaccines" in honour of Jenners' discovery of vaccination against small-pox, though they have nothing whatever to do with the cow (vacca). Most of you are familiar with anti-plague vaccine used so largely in India for protecting people against plague and anti-typhoid vaccine so much talked about at present in connection with our army in France and elsewhere.

The need of co-operation between neighbours in the development of building estates.*

[BY H. V. LANCHESTER, VICE-PRESIDENT OF THE ROYAL
INSTITUTE OF BRITISH ARCHITECTS.]

THE title of this pamphlet does not convey a very accurate idea of its subject-matter. It is true that there are numerous references to the advantages of co-operation in building activities, but these are more or less incidental, and are only introduced as subsidiary to the main argument.

The real substance of Mr. Orr's lectures will be found to be an uncompromising criticism of the present building regulations and building practices in Bombay, a criticism which will, we imagine, convince most of those interested in such questions, that there is indeed urgent need for revision of a drastic and comprehensive character.

We are most of us familiar with the story of the mythic-al Irishman who thought to lengthen his blanket by cutting a strip off the top and sewing it on to the bottom. Now the present state of affairs in Bombay reminds me somewhat of

* Two lectures delivered before the Bombay Co-operative Housing Association by the Hon'ble Mr. J. P. Orr, C.S.I., I.C.S., Chairman of the Bombay City Improvement Trust.

this story, with the procedure reversed. While some are endeavouring to lengthen the blanket, i.e., increase the light and air, others are simultaneously cutting an equal measure of the other end so that finally the result is the same and matters remain pretty much as they were.

It is gratifying to see that Mr. Orr is hopeful that an improved state of affairs is imminent, as we consider that he has an easy task in proving that under existing conditions the aspirations of Bombay towards better housing are unlikely to be realized. As an illustration of this we may quote the sixth paragraph of his paper :

“ How rapidly the Bombay slums are growing is shown by certain building statistics collected at my instance by the Municipal Engineer. I find that in 1914-15, the total floor area in newly completed buildings or additions to existing buildings aggregated 93,338 sq. yds. This is probably below the average for normal years, as building operations received a check in 1914 on account of the war. Still the magnitude of these figures shows how important it is that new building operations should be under sufficiently strict Municipal control to ensure that the newly created residential quarters fully satisfy the requirements of up-to-date sanitary standards. Now, of these 93,338 sq. yds. about one-third roughly is in new buildings on Improvement Trust Estates and may therefore be taken to be satisfactory from the sanitary point of view. The remainder—over 60,000 sq. yds.—is in buildings outside the Improvement Trust estates. The Municipal Engineer is always complaining that he has to pass plans because they involve no breach of existing bye-laws though he feels they ought to be vetoed because they tend to the creation of slums. I once asked him whether as many as half the cases he has to pass are seriously open to objection and he replied “ nearer three-quarters.” At this figure the floor area added to slums in 1914 was about 45,000 sq. yds., sufficient according to the limit of 25 sq. ft. per head laid down in sec. 379A (4) of the Bombay City Municipal Act to accommodate over 16,000 adults. This shows how important it is that there should be no further procrastination about amending the Municipal bye-laws.”

Paragraph 11 also gives a vivid picture of another method by which congestion is accentuated :

“There are a few cases of houses to which it is proposed to add additional storeys, thereby intensifying the insanitary conditions that arise from the sites and those immediately adjacent to them being already overcrowded with buildings.

‘The records of the Undria Street Improvement Scheme area show that since 1901:—

(a) Out of 41 houses in this scheme 14 had a loft removed and one extra storey added and the average assessment per house had gone up from Rs. 441 to Rs. 867.

(b) One house had 2 extra storeys added and the assessment had gone up from Rs. 338 to Rs. 1,437.

(c) 19 houses had minor sanitary improvements made in them, and the average assessment per house had gone up from Rs. 545 to Rs. 998.

(d) Seven houses had been pulled down and new houses erected and the average assessment per house had increased from Rs. 537 to Rs. 2,388.

(e) The total assessment had therefore more than doubled in the interval between 1901 and 1913.’”

The plan (printed on the opposite page) showing existing structures on a site auctioned in December 1909 will give a good idea of the present possibilities in the direction of overbuilding.

Now at this point Mr. Orr introduces the proposition that co-operation may be regarded as a possible remedy for these defects but almost immediately returns to his attack on the building regulations of Bombay, in which he has, alas, only too easy a task. In reference to Lamington Road we read:—

“When the first three houses were put up few people would have suspected that a slum was being created. Most of the rooms in the two corner houses were excellently lighted and ventilated and even in the middle one there were comparatively few rooms open to objection, because the backs were in *echelon* and there was no building behind them. But subsequently the open spaces in the rear

were filled up ; every year one or two new houses were built ; the side passages between the original three houses became blocked by new houses ; and now there is not a single back room in any of the houses in this block which is adequately lighted and ventilated. If you go into these houses you will find that on account of the bad smells from these narrow gullies, into which light seldom penetrates and into which too many residents throw refuse from their windows, especially from kitchens, people have to keep their windows closed so that their rooms are not only dark but without ventilation. There are similar blocks on either side of the one shown in the model, and insanitary as they are now, they will become even worse when the neighbouring lands are built on, unless the owners of the houses which now look over open land arrange with their neighbours to secure the adjacent strips of land from ever being built over.

“There are many such areas upon which slums are being created before our eyes under the existing bye-laws and many more will be created if the Municipality do not amend their bye-laws and let people know beforehand that rooms newly constructed now will not necessarily be treated hereafter as fit for human habitation just because they comply with the existing bye-laws.”

And further on :

“I may now turn to a different class of cases, viz., house sites in large open areas with houses dotted about here and there at long intervals. Here there is a less obvious, but none the less serious, process of what must ultimately be slum formation going on. Take the case of Mahim. Here the main fault is that there are few roads and no drains and no general plan for development of future roads and drains. The houses are in some parts so scattered that the casual observer might attach no importance to the enforcement of building bye-laws. The evils that are being created will not be generally recognised until the houses are more congested. But then perhaps it will be realised that houses have been allowed to spring up just anyhow and anywhere, so that it is impossible to construct many roads without demolishing many houses. Only recently we have had several cases in which the Municipal Engineer warned the Municipality that unless within six months they decided upon certain lines as the lines of certain roads

he would have to allow houses blocking those lines to be constructed ; and yet, so little is the mischief that is being done by the random erection of houses realised by the Municipality, that in some cases those intervals of 4 or 6 months were allowed to elapse before the Committee to whom the Municipality referred the Engineer's report was even convened to discuss the matter ; and now some of those houses are under construction.

“ One great trouble in Mahim is that houses are allowed to be built without any better means of access than the 8, passage prescribed by the Municipal bye-laws ; and too often a street to which this 8 passage gives access is a mere water way or a narrow winding footpath hundreds of yards away from the nearest pucca road.”

At this point it is, however, time that we looked into Mr. Orr's advocacy of co-operation. Now co-operation is, as we know, an excellent thing—and both in commerce and in building it has achieved some notable results—but we feel bound to point out that it is not the panacea for sanitary ailments that the author of this paper seems to imagine it to be. The reason for this must be made clear. The character of building depends on the standard appreciated by those who build and not on the economic method by which the operations are carried on. Thus it is just as easy to co-operate for the purpose of erecting a money making slum as for that of creating a garden village ; those actuated by greed of gain will build the one, those with higher ideals, the other. The undoubted fact that co-operation has been more usually employed by the latter class is easily explained. Co-operation will not produce a much more remunerative slum than individual effort ; but it is necessary to secure the superior scheme against the individualist speculator.

While maintaining our view, which is that progress in building does not result from the employment of co-operation, unless this is backed up by superior ideals of life we must therefore seek first to see if these ideals are in existence before we can hope to give them scope by means of co-operative effort.

Let us refer again to the document before us :

“ Take, for example, the Lamington Road plots. Who can blame the man who built on those first three plots for building over nearly the whole of his land, when he was sure that the more residential floor area in a house he could show to an intending purchaser the bigger the price he would be able to squeeze out of him? And who can blame the purchaser for jumping at this bait, if he knew that he could easily find tenants who would not realise the risk of being shut in by new buildings or object to having such narrow dark gullies just outside their rooms? I hope these purchasers will soon repent their bargain, when with the rise in the general standard of comfort and the erection of more houses satisfying modern sanitary standards, they find that their tenants will leave them or only stay on their making a material reduction in the rent.”

This quotation does not promise much at the start, though it ends with a note of hope for the future. We feel that there is perhaps a justification for this hopefulness when we read as follows :

“ Tenants are already grumbling at the rents, having regard to the discomforts they have to put up with, and compare their lot unfavourably with that of the tenants of the large blocks recently built by the same builder at the south end of Hughes Road. These buildings were put up in accordance with the plans passed by the Trust satisfying the 63½% rule, and their present amenities are permanently preserved by the Trust's conditions requiring certain open spaces in the rear of the building to be kept permanently free of any structures.”

And as, moreover, co-operative building has already been carried out under the auspices of the Bombay Improvement Trust, there is every reason to expect that in time the advantages of healthy homes will be increasingly appreciated. This influence will, however, take a long time to permeate the community as a whole and the hope of an advance in this direction must on no account be used as an excuse for not immediately adopting regulations to prevent the bad types of housing now permitted.

It is certainly a point to the good that we are entitled to assume that the Bombay Improvement Trust is well disposed towards co-operative efforts having for their aim improved conditions of housing. We do not know how far its existing powers enable it to afford support to such schemes, but we imagine that a great uplift could be given if the Trust with its financial resources could guarantee co-operative schemes of which it approved as sound, and thus facilitate borrowing from the existing banks, or the formation of a co-operative banking society for this specific purpose.

The second part of Mr. Orr's lecture deals with the existing slums of Bombay and the manner in which they have been allowed to grow up. The quotation of a note by Mr. Kissan will give some idea of the existing state of affairs :

"There are in Bombay large areas covered with the foul slums which called into existence the City Improvement Trust. It is not uncommon to find a continuous area of buildings each occupying practically the whole site on which it stands. Each building may be surrounded almost entirely by a dark, narrow gully which, in the absence of any possibility of installing a proper drainage system, is an open drain containing the waste water used for domestic purposes, and defiled also with urine, with excreta overflowing from the privy baskets, and with all kinds of refuse thrown out of windows. Except for some small dirty interior chauks, these gullies may constitute the only access of light and air to the rooms in the buildings. Most of the rooms have obviously no proper supply of light and air and many of them are dark hovels which no breath of fresh air ever reaches. Often such small windows as look out on the narrow passage cannot be opened at all because of the foulness of the gullies and because of the fear that rubbish and filth thrown out of windows will enter the rooms. But lack of light and air is by no means the only fault of such dwellings. There is also the very imperfect drainage which results from the crowded nature of the sites, and the dampness of soil due to this insufficient drainage and other causes. Dwelling rooms are too small and too low. Yards and compounds are not decently paved. Proper arrangements for disposal of refuse are absent."

Interesting diagrams are appended showing the gradual enlargement of buildings which has resulted in the present congestion and slum conditions. We reproduce a typical one adding the descriptive notes.

"Perhaps, as shown in the first line of the diagram, the owners of the two houses shown, let us call them A and B, had, to begin with, a little open space between the street and the house. Privies were built at the bottom of the back compound right on the sweeper's gully.

"Some years later both house were enlarged as shown in the second line. B retained his front compound and A put an "ota" first and then perhaps a weather shade supported on posts and subsequently a *pukka* covered verandah and in the rear he erected an extra room by the same kind of lean-to arrangement.

"A few years later these houses passed to richer owners and both were enlarged as shown in line 3.

"Later on A found it convenient to add a storey to his privy block and B having already extended his house as far back as was possible, so that the upward direction was the only one in which he could extend it, added a new upper storey.

"In course of time the demand for accommodation and, consequently, rents steadily increased in the neighbourhood in spite of the growth of insanitary conditions due to the extension of houses upwards and outwards, the reduction of the air space and the increased use of privies ; so A seeing how B had profited by extending his house, re-constructed his own house, adding a new storey to it. Both sites had now become thoroughly congested and insanitary and if the tenants had not been tied down by custom to enduring these conditions and remaining in the places in which their fathers had lived, they would have sought healthier accommodation elsewhere. But as they did not, rents still remained at a high pitch in spite of plague; and encouraged by these high rents, some of the owners, in spite of the expense to which they were put by being required to cut out one set of rooms in each house to form a *chauk* under the Epidemic Diseases Act, actually took the opportunity to add even a third upper storey which made congestion worst congested and brought things to the pass they have now reached."

Next we find set forth the difficulties standing in the way of any comprehensive method for dealing with these conditions together with the author's suggestions for schemes under which several owners may agree to provide increased light and air on a basis equitable to those concerned and possibly with some contribution from the Trust to diminish the immediate loss of income. The following extracts will give a general idea of Mr. Orr's views on this aspect of the problem :

"Houses are being cut back so that there is an open space 20 ft. broad between the backs of opposite house. On either side of this space the height of the house is limited to 40 ft. so that all rear rooms satisfy the $63\frac{1}{2}^{\circ}$ rule. The horrible side gullies between houses are being abolished ; privies are being converted into W. Cs. connected with a sewer running down the centre of the 20 ft. space ; sullage water instead of fouling the narrow spaces between houses is taken underground into these sewers ; the central passage is being sloped and tarred so that rain water may run off it into the storm water drains along the streets. This central passage will serve as a safe play-ground for children who now have no play-ground but the street.

This work is still in progress ; and it is interesting to see the backs of houses being gradually taken down and to note the improvement effected thereby. Within a year the whole character of this area will have been completely changed and, I am sure, the residents of neighbouring slums will want us to come and do similar work there.

Some one may well ask why not carry on this good work and extend this method of improvement to the neighbouring slums ? Well, if the Trust had unlimited funds at their disposal, I am sure, they would be glad to do so ; but the trouble is that this work is very expensive and involves considerable delay.

The public purse can never stand such a strain as this system demands, if it is to be applied to the whole of the Bombay slums, the area of which is already well over a thousand acres and is annually extending by reason of the inadequacy of the control which

the existing law and by-laws give the Municipality over building operations and estate development.

As the law now stands, the Trust can be compelled to acquire the whole of a house if they propose to acquire any part of it; and it is the cost of acquiring whole houses that makes these schemes so expensive.

There used to be the same difficulty in England; and it was met by an amendment of the Housing of the Working Classes Act empowering the Local Authority to acquire parts of houses which is what we want to be able to do here.

We also want to be able, like Local Authorities in England, to levy contributions from owners of houses towards the cost of the creation of open spaces by which those houses benefit.

I think I have said enough to show the urgent necessity of putting a stop to the sweating of building sites in the interests of the slum-dweller. It is not so obvious that there is such a necessity in the interests of the slum-owner. It may at first appear that every increase in rentable floor area means an increase in rents and therefore in profits for the slum-owner; I am afraid it is true that a good many slum-owners have had this fiscal profit in view rather than the interests of their tenants when they have added new storeys to their buildings and, undoubtedly, so long as they can keep their rooms full and their old tenants stick to them and bring them new tenants from their friends upcountry in spite of the deterioration of their surroundings and the risk, which they are too ignorant to appreciate, of getting such diseases as tuberculosis themselves and taking it home to their upcountry villages, so long the slum-owners' profits will continue to increase. But this increase cannot go on indefinitely. A point must at length be reached at which the over-sweating of the land causes such intensification of slum evils that the local authority must step in and veto the occupation of the worst rooms even if the tenants have not themselves suffered so much from their surroundings as to be forced to seek other quarters in more healthy surroundings. In this way a selfish slum-owner who has pushed on with the extension of his own building regardless of the effect on his neighbours and has thus encouraged his neighbours to follow the same course

may ultimately be hoisted on his own petard and find it impossible to get tenants to maintain his old profits or sell his property.

If slum-owners do not avail themselves of the Trust's offers of help, the depreciation of their slums must inevitably set in in the near future and ultimately it will be possible to acquire the slums without great loss to the public purse. But meanwhile I can only repeat my emphatic opinion that it is the bounden duty of the Local Authority to alter the law and by-laws so as to stop the further sweating of building sites beyond the stage marked down by the 63½° standard of lighting and ventilation; and this not only in the interests of the slum-dwellers but in the interests of the slum-owners, the interests of public health and the interests of the public purse."

Village Panchayats in Baroda.

IN refreshing contrast with the apathy met with in British India regarding the resuscitation of the village panchayats is the optimistic and sympathetic report issued by the Baroda State on the success of the village panchayats in that State. There were as many as 2,241 village boards in 1913-14, and how the system introduced new life in the people can be judged from the following extracts from the report issued by the State Government :—

It is satisfactory to find that village people, especially in Baroda and Kadi Districts, have begun to show lively interest in the works of their villages. Thus in Baroda, out of 134 works completed during the year, 114 were executed by villagers and only 20 were given on contract. Thus it will be seen that many more works were done by village agency than by contractual agency.

The village Boards have also discharged their duties satisfactorily. The number of matters disposed of by the several village boards was 2,337 as against 1,554 in the previous year in Baroda district, 2,360 as against 1,960 in Kadi district, 2,479 as against 1,001 in Kassari, and 1,964 as against 1,664 in

Anneli district: some capable village boards have been empowered to try minor civil and criminal cases and this duty is also well discharged by those who are invested with it.

* * * *

The year under report has witnessed an important change in the adoption of the principle of distributing two-thirds of the local cess grant allotted to the *taluka* boards among village boards in proportion to their receipts, whereby each village board is now in a position to supply its own wants and has not to depend upon the *taluka* boards for its petty needs. * * *

Having their allotment and their needs before them they can now shape and regulate their own programmes. This money combined with the sale proceeds of fruit trees, etc., if judiciously used, will gradually improve the state of the villages in respect of roads, wells, sanitation, etc. These boards have realised the importance of their position and they are availing themselves of the opportunities offered to them by Government for being useful to the whole *taluka* and *prant* in general and to their own village people in particular. Their affairs are watched with keen interest by Government. It is hoped that they will prove worthy of this new trust reposed in them by the judicious use of the money given in their charge.

Supersession of the Hyderabad (Sind) Municipality.

THE following notification has been published in the Bombay Government Gazette of the 9th December 1915 :—

“Whereas, for the reasons hereinbelow stated, it appears to the Governor in Council that the Municipality of Hyderabad is not competent to perform the duties imposed on it by law, the Governor in Council is pleased, in exercise of the powers conferred upon him by section 179 of the Bombay District Municipal Act, 1901, to declare that the said Municipality is incompetent, and to supersede it for a period of three years with effect from the date of this order.

2. The reasons for this order are as follows:—

(a) The Municipality has shown itself incapable of exercising proper control over its executive staff, this incapacity resulting, among other things, in the gross mismanagement of its water-supply installation and the occurrence of extensive defalcations in the municipal funds.

(b) The Municipality has persistently neglected to take effective measures for placing its finances on a sound basis. Instead of providing the required increase of revenue by resort to suitable taxation, it has continued to draw on its reserve funds until the latter is nearly exhausted, and has cut down necessary expenditure to an extent which has seriously impaired the efficiency of its services."

The Bombay Government have also published in a supplement to the *Gazette* some of the correspondence and the full text of the resolution which resulted in the above notification, and have thus given the public fairly ample materials to judge of the propriety or the advisability of the action taken by them.

The charges against the Municipality were pretty serious—bad finance, extravagance, and worse, raiding the reserve fund, defalcations, intrigues and an utter lack of discipline among the staff, an inefficient audit and so on—a pretty formidable list indeed for any Municipality to answer. The defence of the municipality for this portentous charge is not before us; we should have very much liked to have read it, for in some respects, it was evidently satisfactory, or, in the language of Government, "in certain respects the Municipality has been able to place its proceedings in a somewhat less unfavourable light than originally appeared from the statement of charges." This is a very guarded—we were about to say a very grudging—admission from the Government. But why have the Government published the charges alone in extenso and not one word of the defence?

Now, we do not think that the Government should, on no account and on no occasion, take strong action against a

Municipality. We are free to confess that in certain circumstances we should ourselves recommend the extreme step of superseding a Municipal body and when we read the notes of charges we had an uncomfortable feeling that extreme measures were required in this case. But we were surprised to see that the Government memorandum on the unpublished defence of the Municipality was vague, weak and halting in giving reasons for the step they meant to take. For whatever sins of omission and commission the Hyderabad Municipality may have been guilty of, the Government said that they would not interfere with the constitution of the Municipality or with individual Councillors, if the council accepted two suggestions made by the Government. They were, *first*, to appoint a Municipal Commissioner as the executive head instead of an elected Chairman or chief officer, and *secondly*, to impose "direct taxation on a property basis."

Now if the appointment of a strong, trained officer as the chief executive head was one of the two remedies indicated by the symptoms, we are entitled to ask how far the Commissioner had duly performed his duties in guiding and advising and supervising the affairs of the Municipality. For things cannot go bad all on a sudden. One can easily understand that a body of 24 men—of whom 16 are elected non-officials without careful training in the art of running an office—might have blundered with the best of intentions. And if some of them were timid or corrupt, the case would be worse. Surely the law gives ample powers to the Commissioner to set right incipient mischief. Did he exercise them judiciously or did he too let things slide until one day he suddenly woke up and found that affairs slid down to a very low abyss? If so, we cannot congratulate the Governments' own executive officers.

Nor can we congratulate the Government on the suavity of their language in asking the Municipality to adopt the remedies suggested by them. It is really a case of the pistol in hand and the demand for your money or your life, and if

the Municipality showed some self-respect and did not yield at once, we find it difficult to say that it behaved foolishly.

The Municipality agreed to the demand for the appointment of a commissioner, but desired that that experiment should be limited for a period of three years. There is nothing unreasonable in this request. But the Bombay Government chose to regard this as an evasion of the demand. They seem to regard the request of the Municipality as illegal. We confess we have not been able to find any illegality whatever in this request—and we have really studied some law. The very fact that the Bombay Government have had recourse to this argument seems to us to show that the case against the Municipality was not quite so serious as to merit its absolute supersession.

As for the second demand—to impose a property tax—the Municipality definitely rejected it and suggested alternative methods of raising money. We should have very much liked to know what exactly the Municipality suggested. They must have been fairly plausible, for the Government say that they

“ would not..... have rejected them and insisted on the immediate adoption of the Government proposal, had the Municipality signified its unqualified acceptance of the proposal for the appointment of a Municipal Commissioner. He would have been prepared in that case to allow the question of increased taxation to remain for a time in abeyance in the expectation that the thorough overhauling of the administrative machinery of the Municipality and the careful examination of its resources and expenditure which would ensure on the appointment of a Municipal Commissioner would place that body in a position to obtain a clearer view of the condition of its finances and visualise more definitely the requirements of the situation.”

Here then is the head and front of the Municipality's offence in the last resort! It did not unconditionally surrender its powers to a Municipal Commissioner; it agreed only for a term of three years. Would not three years have been fairly sufficient to enable a good Municipal Commissioner to put the

office in order, weed out inefficient or undesirable men, overhaul the administrative machinery and set forth a clearer view of its financial position. We are sorry to note that, even if the Government had good justification for their action, they should have so weakly given up their case in presentation. For as the final resolution runs, it is impossible for an outsider who has some sympathy for self-governing bodies to escape the feeling that the Hyderabad Municipality had less than justice done to it !

We hope the Government would not again treat the representations of a Municipality so cavalierly. The Bombay Government's action is in marked contrast with what the Madras Government have recently done in the case of the Guntur Municipality.

Local Boards in the United Provinces.

THE draft rules proposed to be introduced under the United Provinces District Board Act have been published in the United Provinces Gazette of the 9th October 1915, from which we see that the Local Funds have not, in those Provinces, been so completely separated from the Government Departments as in Madras. Whereas the District Boards in Madras have entire control over the Public Works' staff employed by them, the superior officers of that staff are under Government control in those Provinces. It is only the subordinate staff that these Boards have power to appoint and the qualifications required from the candidates for these appointments have been presented by these rules. These qualifications are what should be possessed by every candidate seeking employment in a technical department like the Public Works.

2. The salary of these appointments varies from Rs. 30 to Rs. 80 per mensem and provision has been made for special promotions up to Rs. 150 per mensem in case of approved service. There is no provision in the rules for deserving men being drafted to the superior appointments as they are entirely

under the control of Government. As the superior appointments in Madras are also in the gift of the Local Boards in Madras, capable men in the subordinate ranks have the prospect of being drafted on to the superior service, which is an incentive to capable men entering the service even in the subordinate grades. The pay and the prospects are not very attractive in those Provinces and it may be doubted whether really efficient men will be attracted to that service.

3. The power of appointment, promotion and punishment of these subordinates is vested entirely in the Local Boards but the Commissioner is requested to see that men are not kept too long in a district, by transferring them from one district to another. Although the rules require that the consent of the Boards concerned should be obtained before effecting such transfers, we would have been gladder if such a provision is removed, as it is likely to fetter the discretion of the District Boards to some extent.

The Madras Legislative Council.

(Contributed.)

IT will greatly interest our readers to know that Local Self-Government absorbed a considerable portion of the attention of the Madras Legislative Council at its last sittings from 23rd to 27th November. More than a dozen interpellations, and 16 out of the 22 resolutions actually taken up dealt with that subject. If only the important truths threshed out during the five days' sittings are clearly impressed on the Government and the public, they would have done real and useful service.

For many years, and especially since the publication of the Decentralisation Commission Report, an amendment of the Municipal and Local Boards Acts for the advancement of Local Self-Government has been expected by the people. Since the famous Resolution of Lord Ripon of 1882 and the Acts of 1884 based thereon, there has been no statutory attempt to recognise the advance this presidency has made

in education and ability to direct local affairs. The Government have promised at various times that they would usher in Bills to amend the Acts. The answer given to question No. 55 at the last meeting seemed to imply that a Bill for the general amendment of the District Municipalities Act, 1884, would be introduced by Government during the course of the year.

But the only Bill introduced relates to the municipal control of noise and disturbance created by factories, etc., and it has been stated that no general revision of the Acts is to be introduced either this year or the next. This in itself is sufficiently discouraging. But the statement of the Hon'ble Sir P. S. Sivaswami Iyer in discussing resolution No. XXIII on the agenda, that the Government cannot place before the public or local bodies any draft bill till they know that the Government of India will accept it, makes matters worse. A special officer for amending these Acts has been at work for several months and all the Bills must have been made ready long ago. Are we then to understand from the Hon'ble Member's statement that the Bills prepared after such great efforts are found to be materially defective? If so, is the Madras Government's proposal too liberal or too illiberal for the acceptance of the Government of India? In any case, the public that has no chance of learning what passes behind the curtain can never expect that the Government of India with the Hon'ble Sir C. Sankaran Nair as the holder of the Local Self-Government portfolio will stand in the way of a liberal advance and must content itself with earnestly entreating the Governments—more especially the Madras Government—not to dash all their hopes to the ground by a chill refusal to provide the amendments necessary for the progress of the country.

The Government no doubt promised (on that resolution and the next) to invite opinions of local bodies as to what amendments are necessary and to give the public opportunities of criticising the Bills. This does not commit the Government to bring in their Bills within any limit of time and in fact may

furnish a good excuse for delaying them for years—more especially if the suggested reforms are not quite palatable to them. It behoves local bodies to send in their reports as soon as they receive the promised communication from Government or, at any rate, without undue delay, and to request the Government to expedite their Amendment Bills.

Turning next to the resolution praying for a committee to inquire and report on the reforms needed in the Local Boards, it is difficult to appreciate the Government's reasons for opposing it. The Decentralisation Commission Report is too general and does not embrace all the points that can be suggested for such reform. The Madras Government that is willing to follow the Bombay Government after the latter's experiment in introducing non-official presidents for District Boards should prove a success has no such desire to follow that Government in this matter. A similar Committee was formed in Bombay and it submitted its report. We have not yet received a copy of that report but as non-official members had taken part in framing it, we confidently expect it to be progressive and to recommend a distinct and perceptible step or two extending the popular franchise and increasing the powers and responsibility of non-officials. The Madras Government has evidently a horror of committees holding public inquiries and a strong dislike of public criticism. No other inference can be drawn from their refusal (in answer to interpellations) to publish the replies of District Boards to the question addressed to them about the desirability of excluding officials from election to District Boards and to the question of prescribing qualifications for District Board Engineers, and their opposition to Resolution No. VII praying for publication of the opinions of Judges, Revenue Board members, district officers and other persons consulted on the institution of village panchayats as recommended by the Decentralisation Commission has no other significance. On that Resolution they were willing to publish the opinions of the Local Bodies and private persons consulted but those of Government officials were declared

confidential. A suggestion was put forward in the discussion that confidential portions may be deleted and an expurgated form of these opinions may be published. But these have obviously little or no value. The rejection of that resolution confirms the general fears that the "angle of vision" of the Madras Government has hardly changed and that they still are retaining all their methods of secret administration while the air is full of cries in favour of increased participation by the people. Officials who write up reports on matters of public importance ought to note distinctly the possibility of future publication of their views and adopt suitable chastened language to express them and if in exceptional cases there should happen to remain reasons of state policy to keep something secret, such extraordinary documents alone may be marked and treated as confidential.

Regarding the opening up of opportunities to non-officials to help the administration as non-official presidents of District Boards and as members of the Sanitary Board, there was a keen and lively discussion. On both subjects the non-official members brought up an amount of cogent reasoning and the force of precedents in other provinces. But it was all in vain. Government took a most regrettable attitude of opposition. It was nouse pointing to Bombay or Bengal. The Bombay Government had accepted a resolution that District Board Presidents should be elected—evidently from non-officials or officials just as the Boards might prefer. But the Hon'ble Sir P. S. Sivaswami Iyer stated that he would prefer to wait and see what is done in Bombay and with what success. The Decentralisation Commission Report recommending the continuance of officials (collectors and their deputies and tahsildars even) as presidents of the District and Taluk Boards was also strongly relied on by him. He, however, could not answer the position that Commission's reasonings had been shown to be faulty in or in application to the case of this presidency, where non-official presidents for Taluk Boards have been found and have turned out a distinct success, not in one but

dozens of cases, and no harm has resulted from the dissociation of the official from his "Local Fund Branch."

After such clear evidence it is a lame excuse to plead that competent men for the presidentship of District Boards are not to be found. The Hon'ble Mr. Gillman said that retired men were wanting in vitality and active men too busy with their special business. But there were retired men in the Legislative Council whose work as chairmen of municipal councils has been acknowledged by Government Reports to be satisfactory and also active (non-officials) business men whose success as Taluk Board presidents was similarly acknowledged. To take one more instance, we may refer to G. O. 1452 L. dated 8th October 1915 just now received. There Government say of the non-official Taluk Board president of Salem that he travelled over almost every road in his jurisdiction and that his relations with the members of the Board and revenue officials were marked by cordiality. Why then harp any longer on the broken chord of want of capable men? We cannot refrain from the question whether the non-official ranks furnishing men for the Council of the Secretary of State, the executive and other councils and boards in this country are too poor to furnish men for presiding over District Boards. A bye issue raised in the discussion whether the District Boards are now "lifeless" did not deserve the prominence given to it by some Honourable Members. No doubt the official presidents might spare a few moments out of their busy day for Local Fund work. But no one can gainsay the distinct advantage of an enthusiastic full timed non-official at the head of the Local Fund administration in a district—one who can put fresh life in every branch of it. The main issue is whether non-official gentlemen are available and as there is so much of evidence or bonafide assertion from responsible quarters of the existence of such gentlemen, the Government should at least call for a report from the Collectors and District Boards if any such gentlemen are found in their districts. He will be a rash man who asserts that all these replies will prove

the absence of a even a single gentleman fit to take up the Presidentship. Indeed, there are now vice-presidents of such boards who are doing the entire work of the District Boards and either from such gentlemen or from the ranks of successful non-official presidents of Taluk Boards and even from outside their ranks a few names could be singled out to make a start in a few selected districts as proposed in the Hon'ble Mr. B. V. Narasimmar's resolution. On the question of adding a few non-officials to the Sanitary Board the Government's reasons for not accepting the resolution were equally feeble. Besides the fact that other provinces included such non-officials in their Sanitary Boards, there is also the recommendation of the Government of India in their latest despatch on Local Self-Government in favour of the extension of that principle to this province. The Hon'ble Sir P. S. Sivaswami Iyer opposed the resolution and asked in what way "except numerically" non-officials could add to the strength of the Sanitary Board and ventured to state that the local knowledge of the non-officials would be confined to their districts, and the proper financial control of the Sanitary Board should be exercised by the finance committee of the Legislative Council, which contains an equal number of officials and non-officials. One is shocked somewhat to hear from a gentleman who was till lately a "non-official" himself that such non-officials can never render any service on Sanitary Boards. They could not merely furnish "local knowledge" but also the popular view of many questions which the experts on one side and the I. C. S. officer on the other would never be able to put forward. There are now some 4 or 5 members of the Sanitary Board consisting of the Chief Engineer, Sanitary Commissioner, Member of the Revenue Board and one or two other European officers. If the Government do not believe that non-officials have much local knowledge of districts not represented by them, how much of such knowledge is possessed by the gentlemen now composing the Board? As for the control of schemes by the Finance

Committee long after the Sanitary Board has passed them, it is well known that it is totally different from that which could be easily exerted by non-officials in the Board. It is very little that is left to the finance committee with its limited scope for work and still more limited materials to work with. The Government tried to avoid a division on this Resolution by assuring the mover the Hon'ble Mr. M. Ramachandra Rao that they would still consider what should be done. But as the Hon'ble mover stated, he had on two previous occasions moved and withdrawn the matter to give them time for consideration. It is to be hoped that the mere fact that the resolution has been defeated by Government is no reason to prevent a further consideration of the subject as promised and that the further consideration will be attended with tangible results.

The subject of the greatest importance dealt with by the Council was the question of village panchayats. The first nine resolutions related to it and they took up a whole day. Resolutions 1 and 2 voiced the discontent of the non-official members in not having been given an opportunity to discuss the question before Government issued their G. O. 1410 L. dated 2nd October 1915 and asked for a committee of officials and non-officials to report on the measures necessary for establishing village panchayats in this Presidency. The Government strove hard and stated that the stage for a committee was before the G. O. The non-officials pointed out the numerous defects of the proposals in that G. O. and that a thorough overhauling of all the proposals by a committee was the only desirable course. A sharp conflict ensued and on a division it was found that 20 were ranged on each side. The Resolution for the appointment of a Committee was lost by the casting vote of the Vice-President. This equal division itself ought to be a sufficient warning to the Government that the public are anxious that Government's scheme for establishing village panchayats ought to be so carefully framed and cautiously carried out as not to result in failure. It will be an evil day if half a dozen deputy collectors are asked to work

some unliked scheme and proceed to carry it out in their routine fashion with results which shatter the great hopes of the people. Two of the resolutions, viz., 3 & 9, the Government was pleased to accept. One was for the simplification of union accounts which now run into some 30 or more books and which the new panchayats in small villages cannot hope to understand. The other was that in the Panchayats to be newly created under the G. O., the village headman should not be made ex-officio chairman but that the Chairman should be elected by the Panchayat. On the question of initiating legislation for the establishment of Panchayats, the Government thought the present Local Boards Act would suffice, though it was pointed out that powers for irrigation, forest management and disposal of petty litigation could not be conferred on the Panchayat under that Act and that in small villages there were not men enough to constitute separate panels for the various functions abovementioned. The Government promised to consider the question of amending the Village Munsiff's Courts' Act and Village Police Regulations etc., for creating village panchayats to deal with petty litigation. They would then give an opportunity for the non-official members to discuss the question whether the general panchayats should be given judicial powers in each case and whether single villages or groups of villages were to be the sphere of jurisdiction for these village courts. How far these promises are of any use remains to be seen. The idea of most people is that unless the general village panchayat that is created now under the above G. O. is given judicial power it will command little respect and it will be positively ruining it to run rival panchayats by its side exercising judicial powers or powers in forest or irrigation matters. How in the amendment of the Village Munsiff's Act etc., the general panchayats now to be formed are to be reconstituted, it is hard to guess. Anyhow the Hon'ble Mr. B. N. Sarma's resolution to give these elective panchayats exclusive civil and criminal jurisdiction in petty cases has not been carried and the panchayats

will be started long before Sir Harold Stuart gets his amendment Acts passed. In opposing the leave for introduction of the Stocks Abolition Bill, he promised to introduce his Bills by November, 1915. Yet even for the next meeting, his bills do not appear to be ready. Probably by the end of 1916 they might be ready for the Council and might perhaps get passed. Meanwhile, P. . . . would be formed without judicial powers and without any better statutory basis than the inadequate provisions of the Local Boards Act. As for the result of such trial we can only with grave doubt and anxiety say "wait and see".

The qualifications of the Health Officer of Madras was another subject that the Council considered.

The permanent Health Officer of the Madras Corporation disappeared on the 22nd of September last. Nothing authentic has been heard of him since then, whether he is "lost, stolen or strayed," it wants a Sherlock Holmes to discover. What is more, the appointment of his successor has not yet been officially announced. For that matter it is not officially announced whether Dr. Macdonald has vacated the office or whether he is only on leave of some kind or other. If he is on leave, the question of an acting Health Officer has to be considered. If he has vacated the office, a permanent successor to him has to be found. And although it is now more than two and a half months since the mysterious disappearance of the Health Officer, the appointing authority has not yet taken official cognizance of the disappearance of the permanent incumbent. In the meantime the representative of the Madras Corporation in the Legislative Council took the opportunity of moving a Resolution at the last meeting of the Council. His motion only aimed at fixing the qualifications that ought to be possessed by the Health Officer of the Madras City.

Evidently that was all that was possible. Rules of debate and other restrictions perhaps hampered the Honorable

Member's liberty of action in bringing the subject before the Council in the form in which he wanted to bring it. The discussion on the subject was interesting. It appears from the report of the debate that there is no difference of opinion between the Honorable mover and the Government so far as the qualifications of the Health Officer of Madras are concerned. That is satisfactory. But, for some reason or other, the Government, though agreeing with the principle laid down in the Resolution, were unable to accept it. Thereupon a most interesting conversation ensued between the Honorable mover of the Resolution and His Excellency the President of the Council. The conversation was as full of mystery to the uninitiated as the disappearance of the Health Officer itself. "Bury the past and write for an epitaph *requiescat*", said His Excellency the President. What if it is to be *resurgam*? asked the Honorable mover. And between the two, the Council looked on—astonished, mystified, helpless. Matters ended there so far as the Council is concerned. We have not heard anything further officially yet. We wonder whether it is to be *requiescat* or *resurgam*. But whatever it may be, it is about time that something is done and the mystery cleared.

Public Health and Sanitation.

The work of Local Authorities in relation to infants.*

THE work of local authorities in securing the improvement in sanitary condition, which has contributed so largely to the recent decline in infantile mortality has in the last few years been supplemented by direct action designed to promote the health and physical welfare of the children. A large number of local authorities have organised work of this character which has in many instances reached a considerable degree of development, and there is now a general desire that the work should be systematised and further extended.

* From the Annual Report of the Local Government Board.

An important starting point of effective action for the welfare of infants is the information which is obtained through the operation of the Notification of Births Act, 1907. This Act, which is adoptive, provides that all births and still births shall be notified to the local authority within 36 hours and it thus brings the authority into touch with the infant immediately after birth.

Local authorities have not been slow to appreciate the opportunities which the Act affords for valuable work in the interests of public health, and those authorities, who prior to the passing of the Act had made efforts to deal more directly with the problems of infant welfare, have found it desirable to bring the Act into force and to utilise the machinery it provides.

We have on many occasions urged upon local authorities the importance of putting the Act in force in their districts, and on the 25th July 1913, we issued a circular dealing with this and other matters.

In this circular we again drew attention to the advantages of the adoption of the Act and to the facilities it affords for valuable work.

The response to the circular has been very gratifying. During the year under review (1913-14), the Act which on the 31st March, 1913, was in force in 384 districts comprising 56 per cent. of the population of the country has been adopted in 201 districts with a population of 3,230,000 including nine county boroughs, nineteen non-county boroughs, 131 urban districts and 42 rural districts.

On the 31st March 1914, the districts in which the Act was in force comprised 65 per cent. of the total population.

There still remain, however, a considerable number of districts in which the Act is not in force, and it may, therefore, be well to indicate briefly some of the advantages which result from its operation and the nature of the work which it facilitates. In the first place, mention may be made of the

assistance which the Act affords in the administration of the Midwives Act. The desirability of bringing the administration of the two Acts into more intimate relationship was pointed out by our medical officer in his recent report on infant and child mortality; and the experience of those medical officers of health in whose districts the Notification of Births Act is in force shows that its machinery affords the most readily available method of eliminating the uncertified midwife.

The Notification of Births Act is also of great value to medical officers in enabling them to ascertain the excessive incidence of dead births in the practice of individual midwives and to give warnings and advice and take such other action as may be needed.

But the main importance of the Notification of Births Act lies in the fact that it enables personal advice to be given to every mother in need of it, and facilitates the removal of insanitary or other conditions inimical to the welfare of mother and child. We have on many occasions urged the appointment of suitable women as health visitors to undertake this work, and much has been done by local authorities in this direction: on the 31st March the number of women so appointed exceeded 600. There can be no doubt that the work of these officers has been most valuable, and there is abundant evidence that their services are much appreciated in the homes which they visit.

Before the introduction of the Notification of Births Act, those health authorities who had undertaken infant visiting were, in the main, dependant for information concerning the infants needing to be visited upon the registrar, who by courtesy supplied to the health office with a list of the births registered. Registration may however be deferred until 6 weeks after birth, and it is during this period that the advice and help of a health visitor are specially important. The Notification of Births Act enables this advice and help to be given at the earliest practical moment and it is extremely desirable

that in organising the work of infant nursing, medical officers of health should arrange for the health visitor to visit the home within a few days of the birth. In the report on infant and child mortality, to which reference has already been made, it is pointed out by our medical officer that, ideally, the first visit after the birth of the infant should be made by the inspector of midwives.

The health visitor must be able to give advice regarding the feeding and clothing of the infant and upon infant hygiene generally. It is impossible to exaggerate the importance of breast feeding, and the medical officer of health should satisfy himself that every health visitor is in a position to give sound advice on this cardinal point, and that she is instructed to impress the matter on mothers at the earliest possible moment.

In addition to her primary work of advising mothers, it is an important part of the duty of a health visitor to have regard to the care of the home generally. She should bring to the notice of the health department all cases of nuisance, and she should endeavour to secure cleanliness, ventilation and order, and, so far as possible, the removal of conditions prejudicial to health. In cases where the home conditions are unsatisfactory frequent visits should be paid. The health visitor should endeavour to secure the attendance of mothers at infant welfare centres where such exist, so as to obtain among other things the advantage of medical inspection for the children and treatment in cases requiring treatment.

While there is a consensus of opinion as to the value of the Act in facilitating administrative measures for the reduction of infant mortality and the foundation of child welfare in urban and industrial areas, there has not hitherto been an equal recognition of the need for the Act and its attendant measures in rural areas. It may, however, be questioned whether maternal ignorance, which it is the chief function of the health visitor to remove, is less prevalent in rural than in

industrial districts ; and the need for the Notification of Births Act cannot be gauged by the rate of infant mortality in a district or county. In recognition of the fact that a comparatively low infant mortality may, nevertheless, include much preventable mortality, and be accompanied by much unnecessary ill-health among infants and children and reduction of vitality in after-life, the Councils of many counties and districts, which are rural in character or include large rural areas, have adopted or are taking steps to adopt the Act. The counties in which the Act is in force or in course of adoption are representative of all the various conditions which obtain throughout the whole country, and county councils who have not adopted the Act would do well to recognise that in every county, whatever its rate of infant mortality may be, there is need for the domiciliary visitation of mothers which can only be undertaken with the best advantage where the Act is in force.

Measures to be taken for the prevention of the spread of outbreaks of cholera.*

Notification of cholera.

I.—The *mukhia* and the *chaukidar* are both equally responsible for at once reporting to the *patwari* the occurrence of any case of cholera or suspected cholera in their village or villages.

If the *patwari* be absent from his circle, the *chaukidar* shall proceed at once to the *thana* to report. It is part of the *mukhia's* duties to see he does so.

II.—The *patwari* on receiving this information or coming to know in any other manner of the suspected outbreak of cholera shall at once give a written report of the circumstances to the *chaukidar*, who shall immediately take it to the *thana*. The officer for the time being in charge of the *thana* shall at once send messages *in green envelopes* to the District Magistrate, the Civil Surgeon and the *tahsildar*.

* A scheme suggested by the Sanitary Commissioner, and approved by the Government of the United Provinces.

III.—The District Magistrate shall on receipt of the news give immediate notice to the Civil Surgeon as well as to the authorities as laid down in paragraphs 2022 and 2031 of the Manual of Government Orders.

IV.—Where the District Sanitary Officer is within the limits of the District, the Civil Surgeon shall send information of the outbreak to that officer.

Measures to be taken by the Civil Surgeon.

I.—On receipt of the information of a cholera case the Civil Surgeon shall take immediate steps to depute vaccinators to proceed to the seat of the outbreak.

II.—The Civil Surgeon shall send with them a supply of two-grain Keratine or Kaolin coated permanganate of potash cholera pills, permanganate of potash and medicines as laid down in the Manual of Government Orders, paragraph 2028.

III.—The Civil Surgeon shall, when possible, visit the cholera-infected village and advise the District Magistrate as to the staff required in the event of an epidemic occurring. He should inspect the work of the staff placed on cholera duty.

Measures to be taken in rural areas.

I.—The distribution of 32 one-ounce packets of permanganate of potash shall be made through the tahsildar to each patwari.

II.—Every tahsildar shall in addition be supplied with a reserve stock of 10 lb. of potash permanganate made up into ten separate packages, each containing 16 one-ounce packets of the drug for issue to patwaris or vaccinators and sub-assistant surgeons on special cholera duty.

III.—Civil Surgeons should ascertain from Magistrates the number of patwaris in the several tahsils of their districts, and shall arrange to have an adequate stock of permanganate of potash in hand for distribution to patwaris and tahsildars.

IV.—Head-quarters dispensaries will also keep a reserve stock of 10 lb. of potash permanganate, on which the tahsildar may indent in case of emergency and on which any sub-assistant surgeon or vaccinator placed on special cholera duty may also draw.

V.—On the issue of any of his reserve stock the tahsildar or medical officer in charge of a dispensary shall immediately indent on the Civil Surgeon for the amount expended. The Civil Surgeon should replace amounts issued to vaccinators and tahsildars by indent on Messrs. D. Waldie & Co., Cawnpore, for renewal of stock.

VI.—Patwaris must be made to understand clearly that after sending information to the thana as laid down in the first part of these rules they must proceed at once to the infected area and disinfect the wells with permanganate of potash and redisinfect them every third day till the epidemic has ceased or till relieved by the vaccinator.

VII.—(1) The District Magistrate should arrange for the distribution of pamphlets to all patwaris, containing information as to the methods of avoiding infection from cholera.

The patwaris should be ordered to acquaint the villagers with the contents of the pamphlet. Leaflets explaining the method of disinfecting wells should also be distributed to patwaris.

(2) If the epidemic threatens to become serious in a defined area, the Magistrate should at his discretion apply to the Inspector-General of Civil Hospitals for the services of a sub-assistant surgeon.

(3) In case of a severe epidemic within a fairly defined area, application should be made by the Magistrate to the Commissioner for sanction to depute a tahsildar or naib tahsildar on special cholera duty.

VIII.—If the epidemic does not rapidly subside, the Civil Surgeon should, when necessary, direct the nearest

travelling dispensary in his own district to move at once to the infected area, reporting the fact that he has done so as a temporary measure to the supervising medical officer of travelling dispensaries. If further assistance is required, the Inspector-General of Civil Hospitals may be consulted with regard to the transfer of travelling dispensaries from adjoining districts.

Pamphlet on cholera.

CHOLERA seeds (germs) are carried from a cholera patient by water or by flies, to the legs of which they adhere like wet *alsi* seeds cling to a stick.

Therefore—

I.—Use only water for drinking, or for washing out the mouth, which has been treated with *lal dawai* (permanganate of potash) or which has been boiled and kept in covered vessels to cool.

II.—Irrigation water is very dangerous as it may carry the cholera seeds from other villages in which cholera is present or even from a single cholera case washing in it.

III.—When cholera is present, all food, including milk, should be well cooked and eaten while still warm. Cooking kills the cholera seeds in the same way as it kills grain seeds. Cold sweets or food bought in the bazaar should be avoided; flies carrying the cholera seeds may alight on cold food, but usually avoid hot.

IV.—Eat no uncooked vegetables or fruit during a cholera outbreak.

V.—Drink nothing without at the same time taking food, because during digestion the contents of the stomach become acid and kill the cholera germ.

VI.—Take food before going out in the early morning.

VII.—If diarrhoea is present, at once take medicine to check it.

VIII.—Let no person suffering from cholera be near any food or drink that is meant for other people.

IX.—Let no person prepare or eat food in the same room as a cholera patient.

X.—Let nothing a cholera patient has used or that has been near a cholera case be put near food or water that is meant for other people.

XI.—Everything that a cholera patient purges or vomits should fall into *gamlas* half filled with dry earth or quicklime. All such earth, quicklime and discharges, and at the termination of the case, the *gamla*, must be buried in the ground three feet below the surface but never near any well or spring or source of the water-supply.

XII.—The bed, bedding and clothes of a cholera patient, even if he has recovered, must be burnt.

XIII.—Heaps of refuse are used as breeding places by flies and flies are well known to carry cholera germs in and on their bodies from infected motions and vomits to any food to which they can gain access. All heaps of refuse should therefore be removed from inhabited areas in order that the fly population may be reduced to minimum.

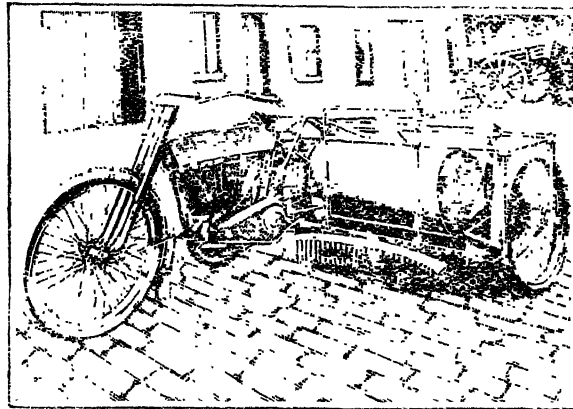
Ducks and Mosquitoes.

Much has been heard about the ability of bats as a means of destroying mosquitoes. According to recent experiments, the most formidable animal enemy of the mosquito is the duck, and the introduction of this bird is recommended for eliminating mosquitoes and the diseases which these insects spread from marshy regions where draining would be too costly. Two artificial pools were constructed of equal area, ducks being placed in one and fish in the other. The former pool was quickly freed from mosquitoes larvae while in the other they continued to abound. Wild ducks are said to prefer mosquitoes to all other food.

Road Sweeping.

Motorcycle Street Sweeper.

THE side-car has opened up many fields of usefulness for the motorcycle. One of the latest applications is shown in the accompanying illustration. The motorcycle is provided with a street sweeping side-car. In front of the side-car is a steel brush which may be depressed so as to bring it into contact with the pavement. The brush then scrapes and loosens up the dirt, so that the rotary broom which is immediately behind it can sweep it up. A handle



may be seen beside the driver's seat. When this is raised, the broom is lowered into contact with the pavement and caused to rotate. When the handle is lowered, the broom rotating mechanism is thrown out of operation. A machine of this type is particularly adapted for use on streets paved with asphalt or with wood. One of these machines has been tried out in Washington and has proved very efficient.

The Bombay Water Works.

The duplication of the Tansa Main.

PRIOR to 1860 the City was dependent for its water-supply upon shallow wells and tanks within the Island which were used alike for drinking, washing and bathing purposes. Many of the wells dried up during a portion

of the year and the quantity of drinking water was so insufficient that it had to be brought into the City by the Railway or on country boats. The inferior quality of the water available was an even greater danger to the health of the City than the deficiency in its amount. In the absence of any sewage system, the drinking water of the wells became highly contaminated and among the consequences were the outbreaks of cholera which used to ravage the Island. Many years ago, therefore, steps were taken to secure a pure and sufficient supply of water from outside and the first result of these efforts was the construction of the Vihar lake, begun in the year 1856 completed in 1860 and handed over to the Municipality in 1863. The cost of this lake which impounds 9,000 million gallons amounted to Rs. 65 lakhs of which it was agreed that Rs. 45 lakhs should be repaid by the Municipality to Government, the remaining Rs. 20 lakhs being a contribution of Government towards the introduction of the first water-supply into the City.

During the first few years after the introduction of Vihar water, 7 million gallons per day, equivalent to a supply of 10 gallons per head, was brought to the City from the lake through a 32 inch main. This at first gave a constant supply, but the rapid increase in the use of pipe water soon rendered the supply insufficient. Ultimately the supply from Vihar was increased in the year 1885 to $19\frac{1}{2}$ million gallons per day by the laying of an additional 24 inch main. In the meanwhile the Tulsi Works had been constructed at a cost of Rs. 40 lakhs. These works, begun in 1872 and completed in 1879, constituted a lake which impounds about 2,000 million gallons of water and supplies the City with $3\frac{1}{2}$ million gallons per day through a 24 inch main. It was, however, even at that date recognized that these supplies would have to be supplemented from a larger and more distant source. The whole country round Bombay was surveyed by Major Tulloch, of the Royal Engineers, and in the year 1872 he selected the Tansa Valley, about 55 miles distant from Bombay, as the most suitable

site for a large storage lake. The work at Tansa was not begun until the year 1886 and was completed in the year 1892. During the progress of these works the deficiency of water in Bombay had become so marked that it was thought desirable to form the Powai lake as an emergency work and this was completed and brought into use in the year 1891 at a cost of Rs. 6 lakhs. The intention was to use the supply from this lake which amounted to 800 million gallons per annum during the monsoon only. As, however, the water thus provided was of an inferior quality to that received from the other Municipal lakes, the Powai supply was on the completion of the Tansa Works discontinued and was thus utilized for one year only. The Tansa Scheme comprised the construction of a lake of 18,000 million gallons capacity impounded by a masonry dam over a mile and a half in length and 118 feet high at its highest point. A conduit 55 miles in length was formed, partly of pipes and partly by a masonry aqueduct, to bring the water into Bombay. The aqueduct which aggregates 22 miles in length is capable of conveying 40 million gallons per day. One pipe only of 48 inches diameter was originally laid which allowed 18 million gallons per day to pass to Bombay. The total cost of the original Tansa Works amounted to Rs. 150 lakhs.

To receive the water thus brought from sources outside Bombay, reservoirs and filters were provided at Malabar Hill and at Bhandarwada Hill, while numerous smaller distributing pipes which now aggregate about 260 miles were laid within the Island. Through these pipes a daily supply is now given through 25,000 house connections. The opening of the original Tansa Works increased the supply to $31\frac{1}{2}$ million gallons per day equivalent in 1892 to 38 gallons per head. The increase in the population in Bombay, the great expansion of industry, the raising of the standard of comfort and the increased use of sanitary fittings alike, combined to render even this supply insufficient. After long consideration, therefore, the Corporation resolved to augment the supply

from Tansa by an additional pipe line and by the raising of the Tansa Dam by $8\frac{1}{2}$ feet, works which had been anticipated and for which provision had already been made when the Tansa Dam was constructed. In February, 1913, the Corporation sanctioned the scheme for carrying out these and the other works necessary to bring the water-supply up to the demand at an estimated cost of Rs. 92 lakhs. and authorized the duplication of the Tansa main. The contract for the raising of the dam had been given in the August of the previous year to Messrs. Pallonji Edalji and Sons who completed the work in May 1915 at a cost of Rs. 4,30,000. The storage of the lake was thus increased from 18,000 million gallons to 26,000 million gallons. The duplication of the pipe line was divided into two sections. The portion outside Bombay up to Ghatkopar was constructed of steel 19 miles in length and 50 inches in diameter. The steel pipes were manufactured near the line itself from imported raw material by Messrs. Mephan Ferguson Proprietary, Ltd., of Melbourne, Australia, the subcontractors for the laying of the pipes being Messrs. Pallonji Edalji and Sons. The first pipe was made in February 1914 and the last in August 1914. The whole of the pipes were laid and taken into use by May 1915, the total cost amounting to Rs. 34 lakhs. The cast iron pipes to bring the water into Bombay and to distribute through the reservoirs were supplied by Messrs. Turner Hoare and Company at a cost of Rs. 22 $\frac{1}{2}$ lakhs. The laying of the 18,000 tons of the cast iron pipes was done departmentally.

The actual work of construction was carried out without accident or delay, notwithstanding the outbreak of war before its completion, largely owing to the unwearied supervision and the well-devised arrangements of the Corporation's Hydraulic Engineer, Mr. H. J. Trivess Smith, loyally supported by his staff and by the contractors concerned. The only work now remaining to be provided is a terminal reservoir outside the Island at Ghatkoper which will equalize the supply of water in the City and will render it possible to keep a balance in hand against possible breakdowns. The total cost of the

works which supply Bombay with water amount to this date to about Rs. 370 lakhs. The works are now capable of maintaining a daily supply of 51 million gallons though it is not intended that this supply should be fully given until the demands of the population require it, since there are obvious dangers attached to the introduction of a larger supply than can be satisfactorily used and carried off.

Government Orders and Notifications.

[Madras.]

Extension of towns.

The requirements prescribed in regard to the open space to be left round a house are to be found in rule 15 of the rules regarding the extension of towns, published on pages 505 and 506 of Part I-A of the *Fort St. George Gazette*, dated 26th August 1913. The Governor in Council considers that this rule needs revision in the following directions.

2. In the case of sites on which masonry houses are to be constructed, the width of the whole site (house and compound) should never be less than 45 feet and the main house and other buildings should be constructed so as to leave a clear open space of seven feet on each side, of ten feet in front and of twenty feet at the back. In the case of sites intended for thatched houses, the sites should not be less than 40 feet in width and the house should be so built as to allow of a clear open space of ten feet all round, thus minimising the chances of fires spreading from house to house. The sizes of the plots when they have not been already disposed of should be suitably altered without interfering with the general scheme (if one has been already approved) of the lay-out of roads, market or school sites, temple squares, open spaces, etc. [G. O. No. 1434 M dated 13-9-1915.]

Provincial Grants.

The following grants from Provincial revenues represent the distribution of the customary subsidy intended to supple-

ment the resources of the district boards and credit may be taken therefor in the budget estimates for 1916-17:—

Name of district board.	Amount				Rs.
	of	grant			
	Rs.				
Anantapur	22,793		Kistna ..		1,54,874
Arcot, North	56,358		Koraput		10,091
Arcot, South	73,600		Kurnool		36,068
Bellary	25,769		Madura		50,582
Canara South	1,13,425		Malabar		1,48,530
Chingleput	49,682		Nellore		70,978
Chittoor	42,405		Nilgiris, The		3,150
Coimbatore	56,589		Ramnad		51,936
Cuddapah	26,371		Salem		43,396
Ganjam	83,060		Tanjore		84,901
Godavari	1,00,591		Tinnevely		60,764
Guntur	94,941		Trichinopoly		57,172
			Vizagapatam		86,329
			Total ..		16,04,357

2. This distribution is arrived at by giving each district board one-fourth of its receipts from the land-cess for the year 1914-15 collected at the rate of one anna in the rupee of the land revenue and allotting to the taluk boards in South Canara and Malabar, in addition, a further grant equal to the income derived from the levy of the cess at rates above one anna.

The additional grants payable to the taluk boards in these districts and included in the allotments shown in paragraph 1 are as follow:—

South Canara—	Rs.				Rs.
Coondapoor	33,241		Puttur		26,476
Mangalore	15,900		Total		75,617
Malabar—					
Tellicherry	33,093		Cochin		103
Calicut	5,861		Anjengo		107
Palghat	32,475				
Malappuram	14,815		Total		95,646
Wynad	9,181				

[G. O. N. 1744 L. Dated 27-11-1915.]

[Bombay.]

War and economy.

In view of the special circumstances arising from the protracted duration of the war, it is imperative that the strictest economy should be observed in public expenditure. In accordance with this principle all proposals for fresh expenditure in connection with Government Educational Institutions

that is not absolutely unavoidable are being negatived or deferred. It is only just that a similar policy of retrenchment should be pursued in regard to aided institutions so far as the disbursement of Government grants to them is concerned. It should be accordingly announced to all District Local Boards and Municipalities and to all aided educational institutions that in respect of all proposed educational buildings not actually commenced or of sites or equipment for such buildings not actually purchased, the payment of any grants which may have been promised by Government will be suspended until the financial situation improves.

2. It should also be notified that for the present and until further notice, no educational institutions can be newly placed on the aided list, nor can any building or equipment grant be promised to an institution already on such list. [Circ-No. 3390 dated 22-11-15.]

Supersession of the Hyderabad (Sind) Municipality.

RESOLUTION.—On a consideration of the statement of the charges brought against the Hyderabad Municipality and of the reply which that body had presented, the Governor in Council was of opinion that the municipal administration revealed two important and serious defects, to remedy which the adoption of certain specific measures was imperative. The first defect was the tendency on the part of the municipal body to subordinate the public interest to private and personal considerations, a tendency which had had the result of gravely impairing the municipal control over the executive and bringing about a serious deterioration in the efficiency of the administration. To meet this state of affairs the Governor in Council considered that the appointment of a Municipal Commissioner who would re-organize the executive and place the administration of municipal affairs on a sound basis was absolutely necessary. The other defect was the improvidence which had characterized the financial policy of the Municipality, resulting in a condition of affairs in which that body was faced with a depleted reserve fund,

steadily increasing liabilities, and no prospect of any substantial accretion of revenue which would admit of its maintaining the ordinary standard of efficiency of its existing services, much less of its undertaking the important works of improvement and development which would be necessary in the near future. To remedy this it was considered essential that direct taxation on a property basis should be resorted to, which would rehabilitate the municipal finances by providing the Municipality with a permanent and substantial addition to its revenues. In bringing the above defects to the notice of the Municipality the Governor in Council announced that so long as that body remained constituted as it was, its retention of the control of the affairs of the City must be conditional on the adoption of the two remedial measures indicated.

2. The reply of the Municipality has now been received. In regard to the first proposal it is inconclusive, since the Municipality qualifies its acceptance of the measure by a stipulation for the imposition of a time limit to the appointment of the Municipal Commissioner. Section 186-A (1) of the District Municipal Act contemplates no such qualified and conditional application for the appointment of this officer, and, in the circumstances, Government find themselves precluded from acting under that provision of the Act. Virtually, therefore, the reply of the Municipality is tantamount to rejection of the proposed measure. With regard to the imposition of a property tax, the Municipality definitely rejects the proposal suggesting a number of alternative methods by which it anticipates that the desired increase of revenue might in the aggregate be secured. While the Governor in Council cannot regard these alternative proposals as affording a satisfactory solution of the financial difficulty which confronts the Municipality, he would not, for the present at least, have rejected them and insisted on the immediate adoption of the Government proposal, had the Municipality signified its unqualified acceptance of the proposal for the appointment of a Municipal Commissioner. He would have been prepared in that case to allow

the question of increased taxation to remain for a time in abeyance in the expectation that the thorough overhauling of the administrative machinery of the Municipality and the careful examination of its resources and expenditure which would ensue on the appointment of a Municipal Commissioner would place that body in a position to obtain a clearer view of the condition of its finances and visualize more definitely the requirements of the situation.

3. Since the response of the Municipality is such as to render for the time being impossible the adoption of the measure which he regards as of vital importance to the efficiency of the administration and as an indispensable condition to the retention of the control of local affairs by the Municipality, the Governor in Council finds himself compelled in the exercise of the power vested in him by section 179 of the Act to declare the Hyderabad Municipality to be incompetent and to direct that it should be superseded for a period of three years with effect from the date of this order.

4. The proposal of the Commissioner to appoint a Committee of Management of not more than eight members including the Chairman is approved. All the powers and duties of the Municipality should, during the period of supersession, be exercised and performed by the Committee under the general supervision of the Collector. The business of the Committee will be to re-organize the municipal establishment and weed out its inefficient members, to effect such economies as may be possible, to introduce reforms, to restore the stability of the municipal finances, to build up the reserve fund afresh, and to set on foot an improvement fund. The Governor in Council considers that in order to assist this body in discharging its responsibilities, it is desirable that there should be at the head of the municipal executive an officer of a status and exercising powers corresponding to those enjoyed by a Municipal Commissioner appointed under the provisions of the Act. The Commissioner in Sind should be requested to consider this question and in due course to submit proposals for giving effect to this policy.

Legislative Intelligence.

[Madras.]

THE Hon'ble Mr. K. R. V. Krishna Rao asked whether Government would be pleased to reconstitute the Sanitary Board by increasing its strength so as to admit of its inclusion of an equal number of non-officials?

Government replied that the subject was under the consideration of Government.

The Hon'ble Mr. K. R. V. Krishna Rao asked whether Government were aware that in certain District Boards, Presidents of District Boards were in the habit of submitting the Administration Reports of the Boards direct to Government subject to their being adopted by the Boards subsequently?

Government replied that in very rare cases, Presidents of District Boards had submitted advance copies of Administration Reports, so as to ensure their reaching the Government office by the due date (15th July). In all such cases, the Reports were passed in due course by the District Boards concerned, and the Government did not review the reports until they had received the Board's resolutions thereon.

The Hon'ble Mr. A. S. Krishna Rao asked whether any, and if so, what municipalities in the Presidency made representations to the Government within the last four years for permission to stop or suspend collection of school fees in the elementary schools under their management, and what orders were passed on those representations.

The following statement showing the information was placed on the table :

Member.	Name of municipality.	Date of application.	Nature of the proposal.	Nature of the order passed.
1	Kumbakonam.	24th March 1911.	Abolition of school fees in the six municipal elementary schools.	Approved except in the case of the Pettai street boys' school.
2	Masulipatam.	21st November 1911.	Abolition of school fees in the Pettai street boys' school.	Approved.
3	Berhampur..	29th March 1911.	Abolition of school fees in the only two municipal schools in which fees were levied from non-backward classes.	Do.
4	Nellore ..	10th April 1911.	Abolition of school fees in the municipal elementary school for Muhammadans.	Do.
5	Vizianagram	25th December 1911.	Abolition of school fees in two of the municipal elementary school.	The Council were advised to exempt only pupils whose parents were poor, from payment of fees.
		28th March 1912.	Abolition of school fees in the cantonment Panchama school.	The Council were informed that as Panchamas belonged to the backward classes the Council can themselves exempt them from payment of fees.
		30th September 1912.	Abolition of school fees in the two municipal elementary schools for Hindus.	Disallowed.
6	Kurnool ..	18th April 1912.	Abolition of school fees in three of the municipal elementary school.	The Proposal approved in regard to the school for Muhammadans and the Council advised to exempt only poor boys in the case of the other two schools.

7	Tanjore ..	24th 1912.	July	Abolition of school fees in the schools for Patnulkars and Muhammadans.	was disallowed and the Council were informed that as Patnulkars belonged to the backward classes they might themselves abolish the levy of fees in the school for boys of this class. Disallowed.
8	Calicut ..	21st 1913.	April	Abolition of school fees in the Truvannur girls' school.	Disallowed.
9	Adoni ..	12th 1913.	June	Abolition of school fees in the elementary school for Muhammadan weavers in Underpet.	Only pupils whose parents are poor or belong to the backward classes should be exempted, Muhammadan weavers like other weavers being fully exempted.
10	Parlakimedi..	14th 1913.	July	Abolition of school fees in all the municipal elementary schools.	The Council were, however told that a large addition had been recently made to the list of backward classes and that pupils belonging to those classes might be exempted from payment of fees.
11	Cannanore ..	23rd 1913.	October	Exemption of all girls from payment of school fees and the grant of free scholarships to 25 per cent. of the Hindu and Christian pupils.	The Council were informed that they might themselves exempt pupils whose parents were poor or belonged to the backward classes.
12	Trupati ..	30th June 1914.		Abolition of school fees in the two municipal elementary schools for girls.	Disallowed
13	Tuticorin ..	31st 1914.	October	Abolition of school fees in the municipal elementary school for girls.	Do.
14	Vizianagram.	19th February 1915.		Abolition of school fees in the municipal elementary schools for Muhammadans.	Disallowed with the remark that the Council could themselves exempt pupils whose parents were poor.

Number.	Name of municipality.	Date of application.	Nature of the proposal.	Nature of the order passed.
15	Palamoottab	18th February 1915.	Abolition of school fees in the municipal elementary school for girls.	Disallowed.
		8th August 1915.	Request for reconsideration of the order on the above proposal.	Declined.
16	Guntur ..	21st March 1915.	Abolition of school fees in the municipal elementary schools for Muhammadans.	Disallowed with the remark that the Council could themselves exempt pupils whose parents were poor.
17	Gudiyattam..	8th June 1915.	Exemption of poor Dakni Muhammadan pupils from payment of school fees.	The Council were informed that they could themselves exempt pupils whose parents were poor, but that no general exemption would be granted.
18	Tellicherry ..	7th August 1915.	Abolition of school fees in the municipal elementary school for girls.	Disallowed.

The Hon'ble Rao Bahadur P. Kesava Pillai asked whether with reference to the extension of the elective principle in Union Panchayats, District Boards had since May 1915 recommended any particular unions for the privilege of election ?

Government replied that the Kurnool District Board had recently recommended the extension of the privilege of election of members to the unions of Markapur, Cumbum and Pattikonda, and that no such recommendations were received from other District Boards.

The Hon'ble Member also asked whether any of the 402 unions exercised the privilege of electing their chairmen ?

Government replied that no unions elected their own chairmen.

The Hon'ble Dewan Bahadur V. Ramabhadra Nayudu asked whether the attention of Government had been drawn to the articles headed *Dairying--Improvement of the milk supply* in the *Mysore Economic Journal* dated September, 1915, and whether Government had passed any orders on the subject on the basis of the resolution passed by the Board of Agriculture held at Coimbatore in December, 1913 ?

The following reply was given :—Government have perused the article referred to and the subject will receive attention after the arrival of the expert in dairy work whose entertainment has been contemplated for some time. The Government of India have been addressed on the subject of the recruitment of an officer possessing the requisite qualification, if financial considerations permit.

[United Provinces.]

The Hon'ble Babu Motichand asked how much *per cent.* of the expenses incurred in maintaining the existing Primary schools under District Boards was met by fees realised from them ?

Government replied that nine per cent. of the expenses was met from fees.

The Hon'ble Babu Motichand asked whether, having regard to the proportion of fee income to total expenditure on Primary Schools and the demand for free primary education, Government would take into consideration the advisability of making an experiment by asking one or more specially selected District Boards to remit the fees of the schools under its or their control with a view to eventually making primary education free throughout the provinces, if the experiment proved a success?

Government replied :—The Hon'ble Member is referred to paragraph 2 of Resolution IX of Government (Educational Department) Resolution No. 1611/XV dated the 25th August 1914, on primary education. As there explained, the policy of free education cannot be considered for the province till it has been accepted by the duly constituted authorities for India as a whole. As the Hon'ble Member will observe, ample provision has been made for the remission of fees in the case of poor students.

The Hon'ble Saiyid Raza Ali asked whether it was contemplated to accord to the Moslem community the right of separate representation to the Local Boards?

Government replied that they would prefer to answer the question after the conclusion of peace.

The following resolution was moved by the Hon'ble Lala Sukhbir Singh and was put to the vote and carried :—

That this Council recommends to His Honour the Lieutenant Governor that the Government may be pleased to organise village panchayats in some districts as a trial, and give them powers to settle petty civil and criminal disputes and look after the village sanitation, roads, wells and general health of the people.



Recent Publications.

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DENMARK AND THE DANES. By William J. Harvey and Christian Reppien. With a map and 32 illustrations. T. Fisher Unwin, Ltd. Price 12s. 6d. net.

[The chapters dealing with agriculture are highly interesting and will teach us to make "two ears of corn or two blades of grass grow where only one grew before". We learn that there are at present 1,200 Co-operative dairies in the country owning over a million cows; and while through these Co-operative concerns the producer secures the utmost value for his produce, the consumer saves the middleman's profit—often 120 per cent.—and is assured, through the most vigorous scientific inspection, of the absolute purity of the article he buys.]



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South West Suburban Water Co., v. St. Marylebone Union, (1904) 2 K. B. 174. 61, 63
Srinivasa v. Rathnasabapathy, I. L. R. 16 Mad. 474 13
Steel v. Dartford Local Board, (1891) 60 L. J. Q. B. 256 78, 86
Syed Ameer Sahib v. Venkatarama, I. L. R. 16 Mad. 297 14

REPORTS.

In the Madras High Court.

PRESENT:

MR. JUSTICE SADASIVA AIYAR AND MR. JUSTICE TYABJI.

THE MUNICIPAL COUNCIL OF TIRUPATHI, APPELLANT.

vs.

SREE MAHANT PRAYAG DOSSJEE VARU, RESPONDENT.

Madras Dt. Municipalities Act (IV of 1884), S. 53; Sch. A, cl. (3); 'Money-lender', meaning of;—'Public purposes', what are.

Any person who casually or intermittently invests his surplus funds in mortgage or personal security cannot be considered to follow the calling of a money-lender.

Second Appeal against the decree of the District Court of North Arcot in A. S. No. 97 of 1912 preferred against that of the District Munsiff's Court of Tirupathi in O. S. No. 3 of 1911.

Mr. L. A. Venkataraghava Aiyar for the Appellant.

Mr. K. Srinivasa Aiyangar for the Respondent.

JUDGMENT.

The first question for decision in this second appeal is whether the plaintiff (the Tirupati *Mahant*) is liable to be taxed under section 53 of the District Municipalities Act, read with Schedule A, clause (3) as a "person who exercises" the "calling" of a "money-lender." The learned Vakil, Mr. Venkataraghava Aiyar, who appears for the appellant, the Tirupati Municipality, argues that lending out moneys even occasionally is following a "calling" and that that "calling" is the "calling" of a money-lender. He relies for this contention on certain observations in *Jennings v. President, Municipal Commission, Madras*¹. That case was decided on the interpretation of Section 103 of the City of Madras Municipal Act of 1884, read with Schedule A of that Act. The whole arrangement of the classes of persons liable to pay municipal taxes in Schedule A of the City of Madras Municipal Act of

1884 is different from the arrangement of the classes of persons made liable in Schedule A of the District Municipalities Act. The term "money-lender" does not occur in Schedule A of the City of Madras Municipal Act, whereas it occurs specifically in the District Municipalities Act. The case in *Jennings v. President, Municipal Commission, Madras*¹ only decided that a 'Benefit Society' was a person carrying on a calling (that is the calling or business of a Benefit Society) when it invested funds for profit. That case did not decide that such a Benefit Society carried on the calling or profession of a "money-lender." The word "money-lender" is not expressly defined in the District Municipalities Act, but we do not think that any person who casually or intermittently invests his surplus funds in mortgage or in personal security must necessarily be considered to follow the calling of a money-lender. As indicated in the case of *Kunmetta Chinnarappa v. Kona Timma Reddi*², the "money-lending transactions" must be so "numerous, continuous and systematic" that it might appropriately be called the "trade or business of money-lending." The facts found in the present case do not prove the transactions of loan entered into by plaintiff's predecessors to have been so continuous, numerous and systematic, and the learned District Judge was right in his conclusion that the plaintiff is not liable to be taxed as coming under the class of "money-lender" mentioned in Schedule A of the District Municipalities Act.

The next question is whether the building used for stabling the Devastanam coaches and horses is entitled to be exempted as used for a public purpose, the finding being that some of the horses are used to carry drums in the temple processions and others are used by respectable pilgrims to whom such an honour is shown by the *Mahant*. We think that such uses are uses for public purposes, notwithstanding that the persons who make such use of the vehicles and horses do not belong indiscriminately to all castes and creeds, and that a discretion

¹ 11 M. 253. ² (1911) 2 M. W. N. 111; 21 M. L. J. 559; 8 Ind. Cas. 577.

is vested in the temple Vicharanakarta as to the members of the general public to whom such use is permitted of the said vehicles and horses.

Then it is contended that the plaintiff suing as the Temple Trustee is not entitled to recover the tax levied on the stable-building which belongs to him in a different capacity, that is, as head of a *Mutt* to which the building belongs. But the facts show that plaintiff paid the tax as occupier and not as owner of the building. As he occupied the building by stabling the Devastanam horses and carriages there and paid the tax out of the Devastanam funds and not the *Muttam* funds, he was entitled to sue for the refund in his capacity as occupier, that is, in his capacity as Temple Trustee.

Lastly it is contended that the declaration granted to plaintiff (besides the refund of the illegally collected tax) is worded too widely and that this is not a case in which, in the discretion of the Court, any declaratory relief need be given. We agree with the contention and we direct that the declaration as to the future rights and liabilities of the parties be omitted from the decree.

With this small modification the lower Court's decree is confirmed with costs on the appellant.

PRESENT :

MR. JUSTICE AYLING AND MR. JUSTICE HANNAY.

THE CROWN PROSECUTOR, APPELLANT IN BOTH

Vs.

P. R. GANAPATHY AIYAR, ACCUSED IN CRL. APP. 549 OF 1914,

AND

PERUMAL ACCUSED IN CRL. APP. 550 OF 1914.

Madras City Municipal Act III of 1904, Sec. 409, Cl. 19—By-laws framed under the Act, By-law 169.—Food does not include drink.—Sec. 328—Securing the purity of aerated waters.

Sale of unwholesome aerated waters does not fall within the sale of unwholesome meat, fish or provisions which is prohibited by the By-laws framed under the Madras City Municipal Act. The Municipality must deal with it under the special powers given to it under Section 328.

Appeal preferred by the Local Government under section 417 of the Code of Criminal Procedure against the acquittal of the accused by the 4th Presidency Magistrate, Egmore, Madras, in C. C. Nos. 15569 and 15570 of 1914 on his file.

Mr. J. C. Adam, the Crown Prosecutor. Appellant.

Mr. C. V. Ananthakrishna Aiyar, for the accused in Crl. App. 549 of 1914. Respondent.

JUDGMENT.

In these cases, the Local Government appeals against an order of acquittal in Calendar cases Nos. 15569 and 15570 of 1914 on the file of the Presidency Magistrate. In both cases the charge against the accused was that he had exposed for sale aerated waters unwholesome and unfit for human consumption contrary to By-law 169 framed under Section 409 (19) of the Madras City Municipal Act (III of 1904) an offence punishable under By-law 177.

By Section 409, Clause 19, of the Act, the Corporation is authorized to make By-laws to provide for "the prevention of the sale or exposure for sale of unwholesome meat, fish or provisions, and securing the efficient inspection and sanitary regulation of shops in which articles intended for human food or drugs, are kept or sold." The By-law in question (No. 169) has evidently been framed with reference to the first part of Clause 19, as the second part of that Clause relates to inspection and the sanitary regulation of shops.

The By-law is as follows :—"No person shall expose for sale or keep for the purposes of sale any article intended for human food which is unwholesome or unfit for human consumption." The decision of the cases before us turns on the question whether the word "food" in the By-law includes drink or not. The Magistrate has held that it does not. The learned Crown Prosecutor contends that the word "food" does include drink and in support of his contention refers to the definition of food given in the Standard and Century

Dictionaries, in the English Sale of Food and Drugs Act and in Section 251 of the Bengal District Municipalities Act (III of 1884.) Admittedly, the word "food" in ordinary parlance would not include "drink" and there is nothing in the Dictionaries referred to which would support a contrary view. It is argued, however, that in law, the word "food" does include every article used for food or drink by man other than drugs or water. This, no doubt, is the definition of the term "food" in the English Sale of Food and Drugs Acts (See Halsbury, Volume XV, page 5), but it is evident that that definition was made for the purposes of those Acts and it is so stated in the passage in Halsbury which is above referred to. Similarly, with regard to Section 251 of the Bengal District Municipalities Act. By that section "food" is defined to include every article used by man for food or drink, except drugs or water. But there again, the definition was introduced into the Act by an amendment in 1886 and has special reference to that Act alone. The fact that it was found necessary to introduce the definition by a subsequent amendment of the Act is, of course, a point against the contention of the learned Crown Prosecutor. It is also pointed out by the learned Vakil for the accused that the Madras City Municipality Act can hardly be construed by reference to a mofussil Act of Bengal.

There is no definition of the term "food" either in the Madras City Municipality Act, or, apparently in the corresponding Acts in Calcutta or Bombay. The point which militates most strongly against the meaning which the learned Crown Prosecutor seeks to apply to the term "food" is the fact that in the body of the Madras Act itself, in several places, the words "food and drink" occur, indicating that it was not intended that the latter term should be included in the former. See sections 357 and 358. It is difficult in the face of these sections to hold that the term "food" in the By-law in question does include drink. It is immaterial for the purposes of these cases that the Magistrate has held that grated water and lemonade are not "provisions" within the

meaning of Section 409 (19), as the word "provisions" does not occur in the By-law under which the prosecutions were brought. It may be mentioned that in the Dictionaries referred to by the learned Crown Prosecutor, the word "provisions" is given as a synonym of "food."

The Municipal Council has special powers with reference to the manufacture of aerated waters under Section 328 of the Act. Possibly, this may have been thought a sufficient safeguard by the Legislature for securing the purity of aerated waters. However that may be, as there is nothing in the Act or By-laws to support the view for which the Crown Prosecutor contends, namely, that the term "food" includes "drinks" other than drugs or water, the conclusion at which the lower court has arrived on that point must be upheld. The acquittals are right and these appeals are accordingly dismissed.

PRESENT: MR. JUSTICE AYLING.

P. K. KANDASWAMY CHETTY

Petitioner,

vs.

CORPORATION OF MADRAS

Respondent

Madras City Municipal Act III of 1904, Secs. 287 and 452.—Notice merely referring to Sec. 287 and giving no particulars—Limitation to run from the date of the final order.

A notice issued under Section 287 without specifying any particulars but merely referring to the provisions of the section is not vague or indefinite and must be complied with.

The offence of not complying with the order of the President is complete only after the issue of the final order; and the period of limitation prescribed by the Act within which a prosecution must be instituted begins to run only from the date of the final order.

Criminal Revision Petition praying the High Court to revise the sentence of fine of Rs. 20 passed on the petitioner by the 4th Presidency Magistrate, Egmore, Madras, in C. C. No. 13604 of 1914 on his file.

The facts of the case appear fully from the following order of the Presidency Magistrate:

Sometime prior to 21st October 1913, the accused commenced the construction of a building and sent a plan for sanction to the President of the Madras Corporation.

The plan was altered by the President and before the altered plan was communicated to the accused on or about 15-10-13, the latter had practically completed the building, what he did subsequently being merely to put up a flight of steps in front and a pandal or thatched roof behind over the verandah. On the 21st October last, he was given notice, called a provisional order, stating that as he had not constructed the building in accordance with the particulars on which the permit to construct was based he should demolish the objectionable portions or show cause, within 7 days, why the order should not be confirmed. He showed some cause within the period specified; but this was not accepted by the President who confirmed the previous order on 8-11-13.

2. The accused is now prosecuted for the violation of the President's order under Section 424 of the Madras City Municipal Act III of 1904. The facts are practically admitted by both parties. What is contended on behalf of the defence is that the orders issued to him were vague and not in accordance with the provisions of the Act and that the prosecution is itself barred by limitation under Section 452.

3. As regards the first defence contention, it may be mentioned that the orders were issued under Section 287 of the Act. The section no doubt says that the provisional order should be to "make such alterations as may in the opinion of the President be necessary to bring the work into conformity with the Act, by-law or with the plans or particulars on which such permission was based." The provisional order did not specify the alterations. The sanctioned plan in this case (Exhibit A), however, was self-explanatory and I do not therefore think that the omission of the details in the provisional order when the sanction order based on the plan is referred to in it and the accused was required to conform to it was in any way vague or insufficient.

4. Next as regards the question of limitation: Section 452 says that "no person shall be liable to punishment unless complaint is made before a Magistrate within six months after the commission of the offence." The provisional order was issued on the 21st October, the final order was issued on the 8th November, 1913 and the prosecution was launched on 7th May, 1914. It is contended that as the provisional order since not modified by the final is the one in force, limitation should be held to run from 21st October; apart from the absurdity that such an interpretation would lead to a man's running the risk of a prosecution between the period of the provisional and final order, I find that from the express provisions of the Act itself, the provisional order is not binding at all and it is only the confirming order that is binding, clause (c) expressly saying that "the President may", after hearing objection &c., "confirm the order and such order shall then be binding on the owner". &c. The date of limitation should patently run from the date on which any document or deed takes effect and not from any date on which it was conceived if subject to subsequent alterations. I therefore do not think that the contention re limitation will hold water. The building as it is violates the building rules contained in Schedule XII of the Municipal Act and the President's orders followed the schedule.

I therefore convict the accused and as there has been some room for misapprehension on his side as to what the President might or might not do, I shall deal with the accused leniently and sentence him to pay a fine of Rs. 20.

ORDER:—I do not find that the order of the President is *ultra vires* or too vague and indefinite to be executed. The period of limitation prescribed by section 452 of the Madras City Municipal Act, 1904, runs from the date of confirmation under Clause 3 of section 287 and not from the date of the provisional order.

The prosecution is not time barred.

The petition is dismissed.

PRESENT :

MR. JUSTICE SPENCER AND MR. JUSTICE NAPIER.

THE MUNICIPAL COUNCIL OF KUMBakonam

vs.

VEERAPERUMAL.

*Madras District Municipalities Act IV of 1884, S. 261.—
Suit for damages for breach of a contract entered into with a
Municipality.—Notice of suit not necessary.*

A suit for damages for breach of a contract entered into with a local authority can be instituted without any previous notice of suit. The word 'amends' occurring in the Act refers to tortious acts injuring a person or his property and does not mean compensation or damages.

Second appeal from the decree of the Court of the Subordinate Judge of Kumbakonam in A. S. No. 410 of 1912 preferred against the decree of the Court of the District Munsiff of Kumbakonam in O. S. No. 387 of 1910.

The facts of the case appear fully from the Judgment.

Mr. V. S. Govindachariar for Appellant.

Mr. G. S. Ramachandra Iyer for Respondent.

JUDGMENT.

NAPIER, J.:—In this case the plaintiff brought a suit against the Municipality of Kumbakonam and another, a contractor, claiming to be interested in a contract made by his brother with the defendant Municipality, which contract was still in force, asking for an injunction against the defendant to restrain them from interfering with the work being done under the contract, and for a small amount of damages for extra expense to which the contractor had been put owing to past interference, the person with whom the contract was made not being joined as plaintiffs but being made a defendant on the ground that he was at the time in jail and unable to bring the suit himself. Subsequently, leave was granted by the District Munsiff to amend the plaint and to make the con-

tractor-defendant a plaintiff. This was done and a claim, alternative to that for an injunction, in the form of a claim for damages for Rs. 312-8-0 was added in the view that possibly the conditions had changed in such a manner that an injunction would not or could not be granted. The District Munsiff decreed the amount against the Municipality and dismissed the suit against the other parties, holding that they were in no way responsible for the damage. The Municipality appealed on the ground that notice required by s. 261 had not been given and that the suit was barred by limitation and on the merits. The Subordinate Judge dismissed the appeal.

The points taken in this appeal are that no proper notice under s. 261 had been given, that the District Munsiff erred in law in permitting the plaint to be amended, that the first plaintiff had no *locus standi* to file the suit and that the suit is barred by limitation.

On the question of notice, various points were raised which are only important, if notice is necessary ; but, I am satisfied that S. 261 does not require notice in a suit of this nature. It provides that no action shall be brought against the council or any councillor or servant, on account of any act done or purporting to be done in pursuance or execution or intended execution of this Act or in respect of any alleged neglect or default in the execution of this Act until the expiration of one month after notice in writing has been delivered at the office of the council or at the place of the abode of the councillor or such person, explicitly stating the cause of action, the nature of the relief sought, the amount of compensation claimed and other particulars. Sub-section (2) provides that if such council or person to whom notice has been given has before action commenced tendered sufficient amends to the plaintiff, such plaintiff shall not recover more than the amount so tendered. Sub-section (3) provides that except in the case of a suit for recovery of immoveable property or declaration

of title thereto, the action shall be commenced within six months after the accrual of the cause of action : and sub-section (4) provides that no action shall be brought against the chairman on account of any act done in pursuance or execution or intended execution of this Act, or in respect of any alleged default on his part in the execution of this Act if such act was done or if such default was made in good faith; but that such actions shall be brought against the council.

The suit in this case was one for damages in respect of a contract entered into between the Municipal Council and the contractor for the removal of rubbish. The act alleged to have been done was interference by the council through its servants with the contractor which interference prevented his collecting and disposing of at a profit the rubbish, the subject of the contract. The damages are estimated at the value of the manure which he was unable to collect and so dispose of. The contract is not of such a character as must necessarily arise out of the statutory powers given to a Municipal body although of course apart from the Act, the Municipality would have no existence and would therefore be unable to enter into such a contract.

The question is whether the interference by the Municipality giving rise to the breach is "done or purports to be done in pursuance or execution of this Act" or whether the action is brought in respect of "alleged neglect or default in the execution of this Act." The words used are wide and, it may be said, are also vague; for, in one sense, if a statutory body does any act or makes any contract, it may be said that the act was done or contract made in execution of the Act. But in my opinion this reading of the words is not what is contemplated by the legislature. Some slight indication of the meaning may be gathered from sub-section (2) which speaks of the councillor or servant having tendered sufficient amends to the plaintiff. It would be a natural use of the word "amends" to apply it to any tortious act injuring a person or his property, such as, for instance, trespass. But the word seems inappli-

cable to breaches of contract, where the natural and legal phrase is compensation or damages. This point alone would not be sufficient to decide the case but there appears to be fairly uniform authority both in England and in India for exclusion of contracts of this nature from the purview of the section.

In *Ranchordas Mocrarj v. The Municipal Commissioner for the City of Bombay*.¹ the point was considered and it was held as settled law that a suit on a specific contract was not within the section. Reference is made to the case of *Garton v. G. W. Railway*². There the action was on a contract, the plaintiff suing for money had and received and on accounts settled. Earle, J., held that the notice given under the section was bad. In the Court of Exchequer Chamber, the point was taken that no notice was required and it was held by the Court that an action for money had and received or upon accounts stated was not within the section which provided for notice for anything done or omitted in pursuance of that Act or in execution of powers or authorities made, given or directed in, by or under the Act. It has to be noted that the section does not contain the words in "respect of any alleged neglect or default in the execution of the Act." But the words considered by the Court were "in pursuance of the Act or in execution of the powers under the Act" which words govern the additional words in S. 261 "alleged neglect or default." The *ratio* of the decision in *Ranchordas Moorarji v. Municipal Commissioner of Bombay*³ is stated by the Chief Justice as follows:— The conduct leading to the action is a wrongful act or omission under the contract as distinct from one in the execution of the Act; and it is the breach of a specific contract that is "the occasion of the right to sue."

*The Municipality of Faizpur v. Manak Dulab Shet*³ was a suit for specific performance of an alleged contract by

1. I. L. R. 25 Bom., 387. 2. (1858) Ell. Bl. and Ell., 837.

3. I. L. R. 22 Bom., 637.

the Municipality under which the plaintiff permitted the Municipality to pull down some constructions, they undertaking to rebuild them. There was a breach by the Municipality and damage was sought in addition to the suit for specific performance. It was held that S. 48 of the Bombay Municipal Act of 1884, which was in the same terms as S. 527 of the Bombay Municipal Act, 1888, considered by the Chief Justice, did not apply to suits for damages in respect of specific contracts.

Reliance is also placed on *Mayandi v. McQuhae*⁴,—a suit for money due for a timber contract. It was held that the suit was not within S. 168 of the Town Improvements Act of 1871; but that section is in much narrower words “a suit against the Commissioners, etc., for anything done under the Act” and it would hardly be safe to rely on the construction of such words as an authority for the construction of S. 261. The same objection applies to another case relied on, *Nuthya Chetti v. Secretary of State*⁵. The Act considered there was the Salt Act No. IV of 1889, the words of S. 87 being, “for anything done or ordered to be done under this Act.” Two cases relied on by the appellant were *the President of the Taluq Board of Sivaganga v. Narayana*⁶ and *Srinivasa v. Rathnasabapathy*⁷. The first was a suit for an injunction restraining the Taluq Board from interfering with a wall built by the plaintiff. The Court held that a suit for declaration of title and for an injunction was not within the scope of the section but used the following words “the cases contemplated in that section are suits for compensation and for damages and the principle is to allow public bodies time for tender of amends to parties to avoid litigation.” The words “compensation and damages” are certainly wide enough to cover suits for breach of contract; but they can be applied to the narrower limits laid down in the 25 Bombay case and certainly it did not decide that a suit will lie for breach of a specific contract. The case at 16 Mad., 474 was a suit to recover from a Municipality money

4. I. L. R., 2 Mad., 124.

6. I. L. R., 16 Mad., 317.

5. I. L. R., 31 Mad., 522.

7. I. L. R., 16 Mad., 474.

deposited for the due performance of a contract. The Court decided without giving reasons that the suit was not within S. 261 quoting the words "the cases contemplated in that section are suits for compensation and damages." It has to be noted that this was a suit on a contract but for money had and received under the contract. It is therefore not an authority against the application of the section to a suit for damages for breach; but at the same time the words cannot be held necessarily applicable to such suits. These cases therefore are no authority for the appellant's proposition. The case of *Chunder Sikhur Bandopathya v. Obhoy Churn*⁸, quoted by the learned judges is one in which Garth, C. J., decided that "the section is applicable in those cases where the plaintiff claims damages or compensation for some wrongful act, committed by the Commissioners or their officers in the exercise of their statutory powers." These words can hardly include a suit for damages for breach of a contract.

The last case that is relied on is the *Municipal Council of Kurnool v. Subbanna*⁹. In that case, the point was taken in a petition under Section 25 of Act IX of 1887 that a certain notice sent to the Council was defective and the High Court was asked to set aside the decree obtained by the plaintiff. It does not appear from the report on what basis the loss or damage sustained was ascertained. But reference was made to the case of *Eales v. The Municipal Commissioners of Madras*¹⁰, which was a suit in tort. So far as it appears, therefore, this case is no authority in favour of the appellants. Even if the case was one on contract, the point was not decided, as the Court declined to interfere in revision when the objection to the notice was then raised for the first time.

As against the inference sought to be made from the language of the Court in the above cases, there is the language used by this Court in *Syed Ameer Sahib v. Venkatarama*¹¹,

8. I. L. R., 6 Cal., 8.

9. 13 Mad. L. J. R., 426.

10. I. L. R., 14 Mad., 386.

11. I. L. R., 13 Mad., 297.

where in construing S. 156 of the Local Boards Act of 1884 which is in similar terms to S. 261 under construction, the Court adopts the language of Garth, C. J., in *Chunder Sikkur Bandopathya v. Obhoy Churn* above referred to, that the section is only applicable to suits for compensation claimed for wrongful acts committed under colour of the Act. It can hardly be claimed that this language is applicable to suits for damages for breach of contract. On a careful consideration of the authorities, I have come to the conclusion that there is no conflict between the view taken by this Court and that held in Bombay and on the words of the section and on the view taken in England on analogous words, I am satisfied that the decision in J. L. R. 25 Bom., is correct and should be followed by me. I therefore hold that no notice was necessary.

This second appeal is dismissed with costs.

SPENCER, J.—I concur

Allahabad High Court.

PRESENT :

RICHARDS, C. J. AND MR. JUSTICE TUDBALL.

THE MUNICIPAL BOARD OF AGRA AND ANOTHER—Appellants.

vs.

SUDARSHAN DAS SHASTRI—Respondent.

Public Street—metalled and unmetalled portion.

The unmetalled portion on each side of a public street is none the less a public street.

The facts appear fully from the judgment of the Court delivered by the Chief Justice.

JUDGMENT.

RICHARDS, C. J.—The Court below framed an issue in the following terms:

“Is the plaintiff the owner and in possession of the lands in suit, or do the lands form part of the road belonging to the Board? If road, then what is its extent.”

The Court below has found on this issue that the place on which the plaintiff alleged that hawkers were accustomed to sit was no part of the road; at least this is what we understand the finding to be. The Court seems to have thought that the only part of the road which could be said to be the public road was the part that was actually metalled. In our opinion, this is clearly wrong. We are unable from the maps, and from any information either party can give us, to ascertain with any accuracy the places in which the hawkers sit; but in our opinion, all the ground, whether metalled or not, over which the public have a right of way, is just as much the public road as the metalled part. The Court would be entitled to draw the inference that any land over which the public from time immemorial had been accustomed to travel was a public street or road, and the mere fact that a special part of it was metalled for the greater convenience of the traffic would not render the unmetalled portion on each side any the less a public road or street. With this explanation we refer an issue to the Court below, namely, whether or not the land in dispute is part of the public road.

Calcutta High Court.

PRESENT:

MR. JUSTICE SHARFUDDIN AND MR. JUSTICE TERNON.

MAHANT MOHABIRDAS—Petitioner

vs.

GAYA MUNICIPALITY—Opposite party.

Bengal Ml. Act (III of 1884), Secs. 238, 240 and 273, Subsec. 1.—Building, meaning of,—Erection of a masonry wall without permission.

The erection of a new masonry wall without permission is erecting a building and is an offence.

Rule obtained by the petitioner on the District Magistrate of Gaya to show cause why an order directing the demolition of a wall and an order of conviction and sentence should not be set aside. The facts of the case appear from the judgment.

JUDGMENT.

In this case the petitioner before us has been convicted under Section 273, Subsection 1, of the Bengal Municipal Act of 1884. The Municipality referred to is the Municipality of Gaya. It has been found that without sanction from the Municipal Commissioners the petitioner has straightened the north, south and west walls of his temple by building against the pre-existing walls what may be called a secondary or double wall. It has also been found that similarly without sanction he has built a new masonry wall and thereby enlarged his courtyard. The question before us is, whether what he has done constitutes "the erecting or re-erecting a house not being a hut," within the meaning of Sections 238 and 240 of the Bengal Municipal Act, 1884. Whether the building of the double wall to which we have referred, thereby thickening and strengthening the pre-existing wall, is more than an act of repair or constitutes a material enlargement is possibly open to doubt. But we have no doubt that the building of the new and additional masonry wall, which the petitioner is found to have erected and by means of which he has materially enlarged his courtyard, does constitute the erecting of a house within the meaning of Sections 238 and 240. In Section 6 (4) of the Act, 'house' has been defined as 'including any hut, shop, warehouse or building.' 'Building' has not been defined in this Act, and we think we ought not to construe the expression otherwise than in its ordinary sense and as including erections, structures, or buildings such as masonry walls.

In this view we affirm the conviction and sentence and discharge this Rule.

Bombay High Court.

PRESENT :

SIR BASIL SCOTT, Kt., CHIEF JUSTICE, AND

MR. JUSTICE BATCHELOR.

THE G. I. P. Ry. Co. (Defdts.) Appellants.

vs.

THE MUNICIPAL CORPORATION OF THE CITY OF BOMBAY
AND ANOTHER (Plaintiffs) Respondents.

*City of Bombay Municipal Act (Bom. Act III of 1888),
Secs. 289, 293 : Indian Railways Act (IX of 1890), Sec. 7
Land Acquisition Act (I of 1894), Sec. 7—Vesting of Public
Streets—Right of Ry. Co. to lay lines in such streets—Acquisi-
tion of the street under the Act.*

The effect of vesting of streets in the Corporation is only to vest in that body such property as is necessary for the control, protection and maintenance of the street as a highway for public use.

*Mayor, etc., of Tunbridge Wells v. Baird*¹ followed.

Section 7 of the Railways Act controls Sec. 293 of the City of Bombay Municipal Act; and the Railway Company is entitled to lay railway lines on or across a street without any permission from the Municipality.

A Railway Company is entitled to lay the railway across a street without resort to the Land Acquisition Act.

Appeal against the decree of Beaman, J., in O. S. No. 693 of 1912. The facts of the case appear fully from the judgments of the original and appellate Courts.

BEAMAN, J. :—Notwithstanding the ingenious arguments of defendant's counsel, the point seems too simple to allow of any doubt. Without enquiring how much or how little, under the term "street", vests under section 289 of the Municipal Act, enough certainly does (and this was almost conceded) to support an action for trespass against anyone interfering with the use of a public street as such. Section 293 expressly and designedly contemplates a case like this. No argument has been attempted in support of what was foreshadowed in the first issue. That was abandoned. No permission has been granted.

(to be continued)

¹ (1896) A. C. 434 at p. 442.

Then let me consider Section 7. of the Railways Act. Is a public street "immovable property"? Certainly. Does this public street belong to the defendant-company? Certainly not. The only question remaining to be answered is whether it is immovable property subject to the Land Acquisition Act. In my opinion, most surely it is: defendant contends that it is not, because it is already a public street, and that which is already a public property cannot be acquired a second time for a second public purpose. I am not aware of any authority or of any reason upon which that proposition can be founded. I am referred to Section 10 and Section 14, the latter more emphatically, in support of this contention. I am unable to see how the section can have any bearing or relevancy. The former section merely deals with damage caused by the Company acting under Section 7 and presupposes of course that it is acting under that section. It is said for the defendant-company here, that it cannot be a trespasser because it is acting under statutory authority. That simply begs the question. If it is, *cadit quæstio*. If not, it is as much a trespasser as though Section 7 were not there. Section 14 cannot possibly bear the artificial strain put upon it to support the defendant's argument. It merely deals with a numerous class of cases, of which this might have formed an example, had the Municipality acting under Section 293 of its Act permitted the defendant-Company to lay its rails without any conditions. I do not think that any of the cases cited for the defendant-company are of any assistance. Nor do I think that I gain much from *Rangley v. Midland Railway Co*¹. upon which the plaintiff relies. That is certainly in point, and in spite of the attempt of the defendant to distinguish between the provisions of Section 84 of the Land Clauses Act in England and the provisions of the Land Acquisition Act, the case is a good enough authority upon the general principle. But here I do not feel in need of authority. I have the statutes and I have only to apply them to a simple set of admitted facts.

Under those statutes, the defendant-company could make its private terms with the Municipality, or it could acquire the portion of the street it needed under the Land Acquisition Act. But until it has done one or the other, it is clearly a trespasser upon the plaintiff's land. It does not seem to me to affect this conclusion in the least that there may be some doubt as to the *quantum* of interest the plaintiff has to sell in proceedings under the Land Acquisition Act. The plaintiffs do not press for any particular *quantum* of damages and it would be sufficient to award them Rs. 500 as damages for trespass and all costs of the suit. Declarations in terms of prayers (a) and (b) of the plaint and decree in terms of prayer (c) thereof.

Against this the defendants appealed.

Messrs. Binning and Campbell instructed by *Messrs. Little & Co.* for the appellants.

Messrs. Jardine and Strangman, Advocate-General, instructed by *Messrs. Crawford, Brown & Co.*, for the respondents.

SCOTT, C. J. :—This suit was instituted by the Municipal Corporation and Commissioner of Bombay against the Great Indian Peninsula Railway Company to establish that the defendant-company could not lawfully maintain lines of railway across the Sewri Koliwada Road, a public street vested in the Corporation under Section 289 of the Bombay City Municipal Act, without either obtaining permission granted by the Corporation and confirmed by Government under Section 293 of the Municipal Act or acquiring the land required for the level crossing under the Land Acquisition Act.

The defendant-company pleaded that they had authority to make and maintain the lines of railway under Section 7 of the Indian Railways Act (IX of 1890) which so far as is material is in the following terms:—

“(1) Subject to the provisions of this Act and, in the case of immovable property not belonging to the railway administration, to the provisions of any enactment for the time being in force for the acquisition of land for public purposes and for

companies and subject also in the case of a Railway Company, the provisions of any contract between the Company and the Government, a railway administration may for the purpose of constructing a railway or the accommodation or other works connected therewith, and notwithstanding anything in any other enactment for the time being in force,—

(a) make or construct in, upon, across, under or over any lands, or any streets, hills, valleys, roads, railways or tramways, or any rivers, canals, brooks, streams or other waters, or any drains, water pipes, gas pipes or telegraph lines, such temporary or permanent inclined planes, arches, tunnels, culverts, embankments, aqueducts, bridges, roads, lines of railway, ways, passages, conduits, drains, piers, cuttings and fences as the railway administration thinks proper.

(2) The exercise of the powers conferred on a railway administration by sub-section (1) shall be subject to the control of the Governor-General in Council.”

It appears from Exhibit I that the scheme for the Bombay Port Trust Railway, to run from Sion down the east side of the Island to the Ballard Pier and to be constructed and worked by the defendant-company, was prepared by the Company with the approval of the Secretary of State on the recommendation of the Government of India. The plan put in with Exhibit A shows the level-crossing in question as part of this scheme.

The learned trial judge held that applying the statutes to the admitted facts, the defendant-company could make its private terms with the Municipality or it could acquire the portion of the street it needed under the Land Acquisition Act but until it had done one or the other it was a trespasser on municipal land. His reasoning was—the public street is immovable property not belonging to the defendant-company and subject to the Land Acquisition Act, therefore, the defendant-company cannot exercise the power given by Section 7 of the Railways Act without first acquiring a portion of the street, which they have not done.

We are unable to agree with this view of the law. Where a Railway Company wishes to lay a line of railway upon and across a street, it is neither necessary nor appropriate to proceed under the Land Acquisition Act for the acquisition of the land. If the Government under Section 7 of that Act were to direct the Collector to take order for the acquisition of the land, he would make his award and take possession and the land would then vest absolutely in Government for the railway company free from all incumbrances. The land would then cease to be portion of the street and the Railway Company would be unable to exercise the power given to it of constructing the railways upon and across the "street."

The differences in the English and Indian Statute law upon the subject of railway construction are differences of procedure which do not render English decisions inapplicable to this case. In England, the special undertaking is sanctioned by a special Act of Parliament; in India, by the sanction of the Governor-General through the Home Department. Section 6 of the Railway Clauses Consolidation Act, 1845, provides that "In exercising the power given to the Company by the special Act to construct the railway, and to take lands for that purpose, the Company shall be subject to the provisions and restrictions contained in this Act and in the Lands Clauses Consolidation Act", while the provisions of the special Act incorporate both the Lands Clauses and the Railways Clauses Consolidation Acts: for an example, see *Abraham v. Great Northern Railway Company*². The provisions of the Lands Clauses Act with regard to compulsory acquisition as interpreted by the House of Lords in *Great Western Railway Co. v. Swindon and Cheltenham Railway Co.*³ are substantially of the same extent as those under the Land Acquisition Act of 1890 as interpreted by Section 3 (a) and (b), for Lord Watson at page 800 said: "Taking that (the Lands Clauses) Act *per se*, and irrespective of the terms of any other statute, these clauses

2. (1851) 16 Q. B., 586.

3. (1884) 9 App. Cas., 787

do not appear to be applicable to the compulsory taking of an easement, at least in the sense in which the respondents are by their Act empowered to purchase and take such a right. The only easements which these provisions, read by themselves, seem to contemplate are servitude rights burdening the corporeal lands taken by the Company, which are destroyed or impaired by the construction of the railway. The Company are not dealt with as being either entitled or bound to purchase and take such easements, but as liable to make compensation in respect of their having, by the construction of their authorised works, injuriously affected the dominant land to which the easements are attached. As for the land upon which the railway is to be constructed, the compulsory clauses of the general Act contemplate that the Company shall take the soil itself, and not a mere right to use it in perpetuity." To the same effect is Lord FitzGerald's opinion expressed on page 792.

The effect of Section 289 of the Bombay City Municipal Act vesting all public streets, pavements, stones and other materials in the Corporation and under the control of the Commissioner is only to vest in that body such property as is necessary for the control, protection and maintenance of the street as a highway for public use: see *Mayor, etc., of Tunbridge Wells v. Baird* ⁴.

The Judicial Committee have held that a Municipality in whom public ways were vested was not entitled to compensation in respect of portions of such ways taken by a tramway under statutory powers: see *Municipal Council of Sydney v. Young* ⁵.

Reference has been made for the respondents to Section 290 of the Municipal Act which provides that whenever any public street or part of it is permanently closed, the site may be disposed of as land vesting in the Corporation. That position does not arise in the present case; but when it does

4. (1896) App. Cas., 434, at p. 442.

5. (1898) App. Cas., 457.

arise, it may have to be determined what it is that the Corporation is disposing of.

It is well established that a Railway Company acting under Section 16 of the Railways Clauses Consolidation Act, 1845 (upon which Section 7 of the Indian Railways Act is closely modelled) by constructing a railway upon and across part of the bed of a navigable river or across a highway is doing what if done by an unauthorized person would be indictable as a nuisance: see *Abraham v. Great Northern Railway Company*⁶ and *Oliver v. North Eastern Railway Co.*⁷ In the latter case the trial judge told the jury that as to the duty of the Railway Company with regard to the rails at the level-crossing, they must consider the case as if the company had had the express sanction of an Act of Parliament to put the rails there. In such a case, the Company would have power to put down such rails as are necessary for the purposes of the line but the rails must be laid and kept so as to cause as little injury or danger as possible. A rule for new trial on the ground of misdirection was discharged. For a general statement of the obligations of persons interrupting highways under statutory authority, see the judgment of Moulton, L. J., in *Hertfordshire County Council v. Great Eastern Railway*⁸.

In a case analogous to the present where the Corporation of a borough, being empowered by a Local Act, which incorporated the Lands Clauses Acts, to erect and maintain "on, in, over, or under" any street in which their tramways were laid, poles and posts for the purpose of working the tramways by mechanical power, erected a post for that purpose in the pavement of the street which at that point was the property of a neighbouring owner subject to the right of the public to use the same as a foot-path, it was held that the Corporation were not taking the land within the meaning of Section 189 of the Lands Clauses Act, 1845, but were merely exercising

6. (1851) 16 Q. B., 586.

7. (1874) L. R. 9 Q. B., 409.

8. (1909) 2 K. B. 403 at p. 412.

statutory power in the nature of an easement and an action for trespass could not be maintained against them: see *Escott v. Newport Corporation* ⁹.

The case of *Hangley v. Midland Railway Company*¹⁰ referred to by the learned trial judge and relied upon by the respondents, decided that a Railway Company could not dedicate to the public the surface of a neighbour's land without first acquiring it under the Lands Clauses Act. It does not appear to us to support the plaintiff's position.

The statutory authority under Section 7 of the Railways Act to lay the railway across the street without resort to the Land Acquisition Act being in our opinion established, the application of Section 293 of the City of Bombay Municipal Act is excluded by the words 'notwithstanding any thing in any other enactment for the time being in force'. The Railways Act, Section 16, overrides the Municipal Act; and the sole control over the Railway administration is vested in the Governor-General: see Section 16 (2) and *Municipal Commissioner of Bombay v. G. I. P. Railway Company* ¹¹. The evidence so far as it goes indicates that the railway across the Sewri Koliwada Road has the approval of the controlling authority.

We, therefore, reverse the decree of the Lower Court and allow the appeal dismissing the suit with costs throughout.

BACHELOR, J. :—I quite agree.

Madras High Court.

PRESENT :

MR. JUSTICE KUMARASWAMI SASTRI.

V. M. PURUSHOTHAM SAH—Plaintiff

vs.

THE PRESIDENT OF THE CORPORATION OF MADRAS AND
ANOTHER.—Defendants.

*Madras City Municipal Act III of 1904—Sections 248, 249
and 427—Order of President to demolish balcony—Whether*

⁹. (1904) 2 K. B., 3369.

¹⁰. (1868) L. R. 3 Ch., 306.

¹¹. (1909) 34 Bom., 252.

appeal lies to Standing Committee—Discretion of President—Interference by Court.

Under Section 249 of the Madras City Municipal Act III of 1904, it is the President that has to decide whether in any particular case permission for the erection of a balcony overhanging a public street should be granted or not. If the President refuses to grant permission, there is no appeal against his order to the Standing Committee.

The President's discretion is final and courts cannot interfere with his discretion.

C. S. 175 of 1914, on the file of the original side of the High Court. The facts of the case appear from the Judgment.

JUDGMENT.

This is a suit filed by the plaintiff against the President of the Corporation of Madras and against the Corporation of Madras for a perpetual injunction restraining the defendants or either of them from demolishing or otherwise interfering with the steps leading to the latrine of his house in Kilava Chetti Street and with the steps leading to the front door of his house in Aiya Mudali Street and also from demolishing or otherwise interfering with the balcony of his house. The case for the plaintiff is that he is the owner of house No. 93, Aiya Mudali Street, which is bounded on one side by Aiya Mudali Street and on the other by Kilava Chetti Street, that he applied to the 1st defendant for permission to make certain alterations and additions to this house and got the sanction on 24th July 1913, that on 22nd May 1914, the 1st defendant sent a notice to the plaintiff under section 287 of the Madras City Municipal Act to show cause why the steps should not be demolished on the ground that they were newly built without permission and as such were an encroachment on the road, that he showed cause by writing to the 1st defendant on 2nd June 1914, that the steps were not newly built but that they had been in existence for over sixty years and that, in spite of his protest, final orders were passed directing the removal of the steps, which were confirmed by the Standing Committee on appeal. As regards the balcony, the plaintiff's case is that on 30th

January 1914, he submitted to the 1st defendant a petition for constructing a balcony, that having received no reply until the 21st April 1914, he commenced to build the balcony in anticipation of sanction, that the 1st defendant by his letter dated 13th May 1914, ordered the demolition of the balcony, that he preferred an appeal to the Standing Committee, which appeal the 1st defendant refused to forward to the Committee on the ground that his order was final in the matter and that the action of the President is illegal.

The suit as against the 1st defendant was dismissed at the settlement of issues, as I was of opinion that there was no cause of action against him personally. The 2nd defendant, the Corporation of Madras, filed a written statement denying the allegations in the plaint and stating that the steps were an encroachment upon the public street and that the balcony and the steps were constructed illegally without permission and that the 1st defendant was justified in ordering their removal.

The following issues were settled :—

1. Is the plaintiff entitled to retain the steps of his house for the reasons alleged in the plaint ?
2. Has the plaintiff a right of appeal to the Standing Committee and, if so, is the order of the President directing demolition of the balcony without the final orders of the Standing Committee, legal ?
3. To what relief is plaintiff entitled ?

1st issue :— As regards the steps, plans have been filed by the Corporation which show that objection was only taken to the portion of the steps which project beyond the outer wall of the drain. After the plaintiff examined himself and one witness, the plaintiff's Vakil stated that his client had no objection to remove that portion of the steps which extended beyond the outer wall of the drain both on the Kilava Chetti Street side and Aiya Mudali Street side. There will, therefore, be a decree directing the plaintiff to demolish so much of the steps as is beyond the limit mentioned above.

As regards the balcony, it is not suggested that there was any permission granted by the President either before the balcony was commenced or at any time thereafter. The case for the balcony rests on a different footing altogether, and I shall deal with it under the second issue.

2nd issue :—So far as the balcony is concerned, the complaint of the plaintiff is that the order of the President directing its demolition is an appealable order and that it cannot become final until the Standing Committee dealt with the matter on his appeal; and consequently, an injunction should be granted restraining the President from demolishing the balcony until the plaintiff has exhausted his remedies under the law. The question therefore is whether an appeal lies from the order of the President as regards the removal of the balcony to the Standing Committee. Section 248 of the Madras City Municipal Act III of 1904 provides that "the President may give notice to the owner or occupier of any building to remove or alter within thirty days from the date of receipt of such notice any projection, encroachment or obstruction made against or in front of such building or land in any public street", unless the owner or occupier can show that the projection or obstruction was erected before the first day of November 1865 or, if erected subsequently, with the permission of a duly authorised officer of the Municipality. Section 249 empowers the President to grant permission to the owner or occupier of any building or land to put up a balcony, if by the grant of such permission no public inconvenience is caused. These sections appear under Chapter XXII which relates to "streets" and the heading of Sections 247, 248 and 249 is "Projections and obstructions in streets". Section 442 of the Act provides that the President shall have power to take steps, in case an order is disobeyed, by doing the act himself through his servants. Reading Sections 247, 248 and 249 with Sections 442 and 443, it seems to me that the mischief sought to be

(to be continued.)

remedied and the powers of the President are completely provided for by these sections. Section 427 which relates to appeals to the Standing Committee from the orders of the President, does not provide for appeals in cases where the President exercises his powers under these sections. The argument of the Vakil for the plaintiff is that the case falls under sections 286 and 287 of the Act. These sections come under Chapter XXIII which relates to 'Building Regulations'. Sections 287 provides *inter alia* that if the President is satisfied that the construction or reconstruction of a building "is being carried on or has been completed in breach of any of the provisions of this Act or of any by-law or rule made thereunder or of any direction or requisition lawfully given or made under this act or such rules or by-laws, he may make a provisional order requiring the owner of the building to demolish the work done or so much of it" as he may consider necessary and shall serve a copy of the order on the owner and that such orders shall be final "provided that an appeal" against such orders "shall lie to the Standing Committee whose decision shall be final". Having regard to the position of this section, I do not think that it can be construed as covering the cases falling under Chapter XXII which relates to obstructions in or encroachments on the public streets. The difficulty of construing the section as the plaintiff's Vakil wants me to do is that there would have to be a provisional order made by the President though section 248 requires that no provisional order need be passed at all but simply requires an order directing the removal within a certain specified period. The whole of Chapter XXIII in my opinion provides for cases where a building is built on the owner's own land and does not include cases where a building is an encroachment on municipal property. In cases of encroachments in the streets, the chapter applicable is Chapter XXII and not XXIII. In the view I take of the case, the President was perfectly justified in refusing to send up the petition of the plaintiff to the Standing Committee, as the question relates

to an encroachment on the municipal property the determination of which was within the jurisdiction or province of the President and against whose order no appeal to the Standing Committee is provided for by section 427. In the case of the balcony, it is not alleged that the plaintiff has got a vested right. It is a purely permissive right and as the President is the officer whose discretion is to be final, it is not for the Court to interfere in the matter. I find the 2nd issue against the plaintiff.

In the result, there will be a decree in the terms mentioned above in dealing with the first issue. As the defendant has succeeded on the main questions in issue, the plaintiff will pay the defendant's costs.

Madras High Court.

PRESENT:

THE HON'BLE MR. JUSTICE KUMARASWAMI SASTRI.

GOVINDA GRAMANY—Plaintiff

vs.

THE CORPORATION OF MADRAS AND ANOTHER.—DEFENDANTS

*Injury sustained by a passenger in a public street—
Negligence—Doctrine of res ipse loquitor—Onus of Proof—
Employment of an independent Contractor—Liability of the
Corporation—Measure of damages.*

In a suit brought by the plaintiff for damages for injuries sustained by him by the breaking of a pulley used in a street for lifting heavy water pipes owing to the negligence of the servants of the contractor employed by a Municipal Corporation.

Held, that when the injurious agency which caused the accident was an inanimate object under the entire control and management of the defendants and used on a highway not closed to traffic in executing work which is found dangerous and the accident is such as would not happen in the ordinary course of things if those who had the management used proper care, the *onus* lies on the defendants to show that all reasonable precautions were taken and proper care used.

Held also, that the mere fact that the City Municipal Act cast on the Corporation the duty of supplying pure drinking water would not take the case out of the ordinary rule above stated or the provisions of sec. 106 of the Indian Evidence Act.

Held also, that the Corporation cannot escape liability simply by getting the work done through a contractor.

Penny v. Wimbledon Urban Council, (1898) 2 Q. B. 212 ; *The Snark*, (1900) Pr. Division 105 ; *Holiday v. National Telephone Co.*, (1899) 2 Q. B. 392, followed.

Held also, that in estimating damages to be awarded in cases of accidents, damages will be awarded for physical suffering, for the deprivation of limb and the consequent discomfort that attends the person all through life and also for the lessening of his wage-earning capacity, though damages on the last head should not be awarded on the footing of giving the plaintiff a capitalised value of his income.

C. S. No. of 331 1914 on the file of the Original Side of the High Court. The facts of the case appear from the judgment.

JUDGMENT.

The plaintiff sues to recover Rs. 4,000 as damages for injuries sustained by him owing to the negligence of the defendants. The 1st defendant is the Corporation of Madras and the 2nd defendant is a contractor who was laying pipes under a contract between himself and the Corporation.

The case for the plaintiff is that, in the course of laying pipes in connection with water works, the defendants were guilty of negligence in that they did not close the road for traffic and used defective machinery and unskilled workmen, that in consequence thereof the plaintiff received a serious injury to his right arm by the breaking down of the pulley wheel used for lifting large and heavy iron pipes and that his right arm had to be amputated in consequence of the injury. The plaintiff states that he suffered not only in mind and body but that he has been permanently disabled from working and is unable to earn a living.

The 1st defendant filed a written statement pleading that the Corporation was not liable as the contract was entrusted to an independent contractor, that, on receipt of the notice of claim, the matter was referred to the 2nd defendant who was responsible and that the accident was not due to negligence as all necessary and proper precautions had been taken. The

2nd defendant filed a written statement denying that there was negligence in the way in which the work was done, or any defect in the machinery employed and stating that the injury was caused by pure accident. He also states that the road was fenced and closed for traffic and that the plaintiff, who was aware of the risk he was running and who was warned by his (2nd defendant) men, has only to thank himself and cannot hold him (2nd defendant) responsible for the injury sustained through his own negligence. It is alleged that the amputation was but a remote consequence of the injury and that the damages claimed are excessive.

The following issues were settled :—

- (1) Were the injuries sustained by the plaintiff due to the negligence of any person ?
- (2) If so, is plaintiff disentitled to any relief for the reasons alleged in paragraph 5 of the 2nd defendant's written statement ?
- (3) Is the 2nd defendant an independent contractor and, if so, is the 1st defendant not liable to the plaintiff ?
- (4) To what damages, if any, is plaintiff entitled ?

First issue:—On the 1st May 1914 pipe-laying work was being conducted on the Monegar Choultry road. A trench was dug on one side of the road and iron pipes each weighing about 35 cwts. were being lifted from the road side and lowered into the trench. This work was done by means of a pulley block which, according to the evidence of the 2nd defendant's witnesses, was tested and found to have a lifting capacity of 3 tons. The pipes which were laying on the side of the road were rolled into position and were supported by two beams over the trench. A chain was fixed round the pipes and adjusted. The pipes were raised about six inches to enable the withdrawal of the beams and the pipes were then gradually lowered into the trench where they were joined

together cemented and soldered. This work was being done near the Leper Hospital and, at some distance to the south, lead was being melted to solder the pipes that were laid. The road was not closed for traffic and the case in the written statement that the road was closed for traffic is admittedly incorrect. All that was done was that a light bamboo fencing consisting of two bamboos with a bamboo across was originally put up between the trench dug and the road; but according to the evidence of Dr. Halge who was living opposite to the place where the work was being carried on, this fence disappeared in course of time and was not in existence at the time when this accident happened. The fence even when it existed was totally inadequate to prevent accidents. Mr. Adlard states that if a fencing of corrugated iron sheets 6 feet high had been used the accident to plaintiff would in all probability not have happened. The plaintiff who was a gumastah under a toddy shopkeeper and whose business was to sell toddy in the shop, was passing along the road at about 2 o'clock in the afternoon. According to the evidence on the plaintiff's side, he was hit by the broken piece (M. O. 1) when he was about 50 or 60 feet. According to the evidence of the defendants' witnesses, plaintiff was about 100 to 150 feet away from the pulley-block. The distance may be roughly put at 100 feet to 120 feet from the place where the pulley-block was working, as it is alleged that the pulley-block was working near the Leper Hospital and the accident took place near Sir S. Ramaswami Mudaliar's Lyng-in-Hospital.

The injury received by the plaintiff was a severe one and necessitated the amputation of his right hand above the elbow joint leaving only a small stump. Dr. Halge who was an assistant surgeon attached to the Monegar Choultry Hospital states that he saw the plaintiff immediately after the accident and that he found the bone of the right upper arm was crushed and broken in several places behind and above the elbow and many of the muscles torn. He thought that an amputation of the arm was necessary and the amputation

was performed by Mr. Kamath, Assistant Surgeon, who states that he went to the operation room and found the lower part of the right arm bone was broken in several places and the muscles on the back of the arm badly torn and also an important nerve on the back of the arm. He says that the forearm was hanging by a flab of skin on tendon and an artery and nerve the last two being damaged, that he also considered amputation absolutely necessary, that he performed the operation and that plaintiff was an inpatient for 22 days and was afterwards attending the hospital for about a fortnight. The uncontradicted evidence of Dr. Halge and Mr. Kamath shows not only the serious nature of the injury but also that amputation was an absolute necessity. The statement of the 2nd defendant in paragraph 6 of his written statement that the injury caused to the plaintiff was not of a serious nature and that the amputation was a very remote consequence of the injury is clearly untrue. As regards the cause of the accident, it is admitted that it was due to the breaking of the wheel of the pulley-block. The pulley-block admittedly belonged to the contractor (2nd defendant) and there is no reliable evidence as to when it was purchased or how long it had been at work. Mr. Adlard, who was then Assistant Engineer to the Corporation, states that he saw the pulley-block at work for about 8 or 9 months previous to the accident but that he is unable to state whether the machine was new or old when it first began to work. The 2nd defendant has not given evidence or produced any accounts showing when the pulley-block was purchased and at a very late stage after I asked the 2nd defendant's vakil about the history of the pulley-block and the service which it had undergone, a cooly was examined who stated that it was a new one purchased from Jivajee & Co. No explanation has been given why the 2nd defendant, who was in Court and who could certainly have given accurate details as to the purchase and the price, has not ventured to do so. Mr. Adlard states that he saw the pulley-block working in April and May and that it was apparently in good order.

He, however, states that he did not examine it minutely and that he could not say if there were any latent defects in the machine. He states that, when a broken piece was shown to him after the accident, he found no rust on the grains and that they had a silvery appearance. Mr. Loane, who was a Supervisor getting about Rs. 180 in the Corporation, states that there was nothing wrong, so far as he could see, with the pulley-block, that he was present when the contractor's clerk tested it about 8 or 9 months before the accident by lifting pipes weighing 45 cwts., that he saw the block properly oiled that morning and that the broken parts of the wheels when shown to him, were quite fresh. It is, however, not suggested by any of the witnesses that there was any testing or examination of the machine after the examination spoken to about 8 or 9 months before the accident occurred and all that seems to have been done during the interval was to see whether it was properly oiled or not. Mr. Adlard states in cross-examination that where heavy weights are lifted a periodical and close examination of the block is necessary; and I am not satisfied that the examination made 9 months ago was sufficient to show that there was no defect in the machinery at the time the accident occurred.

So far as the broken wheel itself is concerned, the only portion produced is the piece marked M. O. I. The other parts are not produced in Court and no satisfactory explanation is given why those parts have not been produced so as to allow them to be examined by an expert to see if there was any flaw or defect which was latent at the time when the accident occurred and which could not have been discovered by the exercise of ordinary diligence. Even the portion which was shown to Mr. Adlard and the broken part which was shown to Mr. Loane have not been produced in Court.

As regards the cause of the accident, neither Mr. Adlard nor Mr. Loane nor any of the witnesses for the defence are able to give any explanation. The position, therefore, is that the wheel of the pulley-block which was working on the high

road suddenly broke and injured the arm of the plaintiff. The only possible ways in which the accident could have happened are negligence in the use of the pulley-block or defect in the machinery either latent or patent.

So far as the machinery used is concerned, I don't think that the defendants have proved that there was no defect in the machinery as the only examination spoken to was made about 9 months before the accident and no examination was made subsequently to see whether the use during those 9 months left the pulley-block in a position to lift up pipes which weighed 35 cwts. I am of opinion that the evidence shows that the accident was caused by a jerk in the lowering of the pipes and was due to the negligence on the part of the persons who were employed to lift and lower the pipes. As I have said before, the accident to the plaintiff happened nearly 100 or 120 ft. away from the place where the pulley-block was working. Mr. Adlard admits in cross-examination that he would ordinarily be surprised if any portion of the pulley catch which breaks flies to any distance if the accident was simply due to the breaking of the wheel owing to some defect in it. He states that if there was a sudden jerk, the broken piece would go some distance and that he cannot account for a piece flying any distance otherwise than by an unusual jerk in the pulley; Murugesu Mudali, who is the Departmental Maistry and who was present at the time of the accident, states in cross-examination that as the pipe was being lowered there was a jerk in the chain and that the pipe then fell down, the wheel breaking. He, however, states that he is unable to say how the jerk was caused; but the jerk could only have been caused by the chain being loose when the pipe was lowered. As Mr. Adlard admits that the lifting capacity of the pulley-block was only three tons and the weight of each pipe was 35 cwts. and that a jerk might double or treble the strain it is quite probable that when there was a jerk the strain suddenly increased and the wheel broke. In the view I take of the case there can be little doubt that the accident was due

to negligence as Mr. Adlard admits that one of the rules for the working of the pulley-block is to work it in such a way as to cause no jerk at all either in lifting or lowering the pipes.

There was considerable discussion during the course of the argument as to the applicability of the maxim *res ipse loquitur* to the facts of the present case. There can be little doubt that when the injurious agency which caused the accident was an inanimate object, under the entire control and management of the defendant and used on a highway not closed to traffic in executing work which is found dangerous and the accident is such as does not happen in the ordinary course of things if those who had the management used proper care, the onus lies on the defendant to show that all reasonable precautions were taken and proper care used. The mere fact that the City Municipal Act cast on the Corporation the duty of supplying pure drinking water would not take the case out of the ordinary rule above stated or the provisions of section 106 of the Evidence Act. As I am of opinion that the plaintiff has proved negligence it is unnecessary to discuss the various authorities cited. It is sufficient to indicate the view I would have taken had no evidence been adduced on either side. I find the issue in favour of the plaintiff.

2nd Issue:—The contention of the 2nd defendant is that the plaintiff was when he received the injuries a mere trespasser as the road was closed for traffic and as the plaintiff was warned not to stop where he was when the accident happened. As I have already pointed out, it is admitted that the road was not closed, and the plaintiff was therefore lawfully using the highway, at the time when the accident happened. Some attempt was made to show that he was standing at some distance from the place where the accident happened, and was looking at the melting of the lead. I am of opinion that the defence evidence is weak and unreliable and I accept the evidence of the plaintiff and his witnesses that the accident happened as he was passing along the road on his way to his shop. I find this issue against the defendants.

3rd Issue:—The contract between the 1st and 2nd defendants is marked Ex. III and there can be little doubt from the terms of the contract that the 2nd defendant was not an independent contractor. Even if it were otherwise, it is difficult to see how the Corporation can escape liability simply by getting the work done through a contractor. The whole question as to liability for the acts of independent contractors has been discussed and settled in *Penny v. Wimbledon Urban Council*, 1898, 2 Q.B. 212, *The Snark*, 1900 Probate Division 105 and *Holliday v. National Telephone Co.*, 1899 2 Q.B. 392. In *Penny v. Wimbledon Urban Council*, 1898, 2 Q.B. 212, the law has been laid down as follows:—"When a person employs a contractor to do work in a place where the public are in the habit of passing, which work will, unless precautions are taken, cause danger to the public, an obligation is thrown upon the person who orders the work to be done to see that the necessary precautions are taken, and that if necessary precautions are not taken, they cannot escape liability by seeking to throw the blame on the contractor." I find that both the defendants are liable to the plaintiff, although under the terms between the defendants *inter se* the contractor was liable to pay any damages that might be claimed against the 1st defendant.

4th Issue:—The injury sustained by the plaintiff and referred to by me in dealing with the first issue was a very severe one and it necessitated the amputation of the right hand above the elbow. The plaintiff has in fact got a useless stump in the place of what was his right hand. There can be little doubt that he must have suffered very great pain and that he is now crippled for life. The plaintiff states that he was employed in selling toddy in a bazaar and that by reason of the accident he is not able to do so. It is difficult to see who would employ a man without the right hand to sell toddy to customers and there can be little doubt that the plaintiff's means of earning a livelihood have been considerably lessened. It is always a difficult thing to assess damages in a case like

this but it is settled law that in estimating damages to be awarded in cases of accidents, damages will be awarded for physical suffering, for the deprivation of limb and the consequent discomfort that attends the person all through life and also for the lessening of his wage-earning capacity, though damages on the last head should not be awarded on the footing of giving the plaintiff a capitalized value of his income. Giving the case careful consideration, I am of opinion that Rs. 2,000 would be a fair sum to be allowed to the plaintiff having regard to all the facts of the case.

There will be a decree for the plaintiff for Rs. 2,000 with costs on the full value of the claim and interest at 6 % from the date of the decree to date of payment.

• Punjab Chief Court.

PRESENT :

MR. JUSTICE SCOTT-SMITH.

MADAN MOHAN LAL—Plaintiff

vs.

THE MUNICIPAL COMMITTEE OF DELHI—Defendant.

*Punjab Municipal Act (III of 1911) S. 3 (5) (a)—
Making additions to building without sanction of municipality—
Opening doors and windows whether a 'material alteration'
of the building—Demolition order—Discretion of municipality.*

The plaintiff applied for and obtained sanction to build a *saiban*; the plan submitted showed certain gaps or open spaces between the supports of the roof. The plaintiff subsequently made additions by filling up the gaps with frames of wood and glass some of which were doors and some windows. The municipality having issued a notice to the plaintiff requiring him to demolish the additions, the plaintiff sued for an injunction restraining the municipality from interfering with the additions.

Held, on appeal, (1) that the opening of the windows and doors constituted a material alteration within the meaning of s. 3 (5) (a) of the Punjab Municipal Act (III of 1911) and (2) that the Municipality's action was justified, one of its objects being to vindicate its authority.

Second appeal from the decree of the Divisional Judge, Delhi, reversing that of the Subordinate Judge, Delhi.

Messrs. Raj Narain & Santanam for the Appellant.

Rai Sahib Lalā Moti Sagar for the Respondent.

The facts of the case appear fully from the judgment.

JUDGMENT.

The suit out of which the present appeal arises was brought by the plaintiff against the Municipal Committee of Delhi for a perpetual injunction against the Committee restraining them from interfering with certain additions made by the plaintiff to a building erected by him with the sanction of the Committee. The first court granted the prayer, on the ground that the object of the Committee was one not warranted by the Municipal Act, and that notice in dispute had been issued without any reasonable justification. The lower appellate court, after fully discussing the case, came to the conclusion: (1) that the additions to the building amounted to an erection within the meaning of the Municipal Act; (2) that this erection was not covered by the original sanction granted by the Committee; (3) that the notice was neither ambiguous nor illegal and (4) that the Committee was justified in issuing a notice, one of its objects being to vindicate its authority. It, therefore, accepted the appeal, and setting aside the decree of the first court dismissed the plaintiff's suit. The plaintiff has filed a second appeal in this court.

The learned Divisional Judge has written a very clear judgment. He describes the nature of the building as appearing from the plan originally put in by the plaintiff when he applied for sanction. He also describes the additions to the building. Briefly what the plaintiff asked for permission to build was a *sariban*; it had no doors and no windows, but had eight gaps or open spaces between the supports of the roof. The additions which the plaintiff made were by filling these gaps subsequently with frames of wood and glass, some of which were doors and some windows. Mr. Raj Narain, in arguing the case for plaintiff, referred me to the bye-laws framed by the Municipal Committee under section 92, Act XX of 1891, published in Punjab Government Notification No. 454, dated 6th October 1900. The first two bye-laws are as follows:—

(1) "Every person intending to erect or re-erect any building within the limits of the Municipality shall give notice in writing of his intention to the Secretary of the Committee.

(2) Such notice shall be accompanied by a ground plan, drawn to suitable scale, showing dimensions of plinth, line of frontage of adjoining buildings, and space, if any that will be left on any side between existing buildings and that proposed to be erected. *It shall also show the position of all outer doors."*

Mr. Raj Narain says that the plan put in by the plaintiff with his application for permission to build does show the position of the doors which plaintiff subsequently added. In my opinion, it does not. It shows open spaces no doubt, but there is nothing in the plan or the application to indicate that the plaintiff intended to put doors in those open spaces. Any one looking at the plan and the application would draw the inference that what plaintiff intended to build was a kind of open verandah without any doors. I am quite clear, therefore, that the addition of doors in the open spaces shown on the plan was not covered by the original sanction to build.

The next question is whether the plaintiff by these additions made a material alteration to the building within the meaning of section 3 (5) (a) of the Punjab Municipal Act III of 1911. On this point also I have no hesitation in agreeing with the learned Divisional Judge and with the reasons given by him for his conclusion.

The plaintiff having, therefore, erected a building without sanction, the Committee was authorised under section 195 of the Act to send him a notice requiring that the building should be altered or demolished, as the Committee deemed necessary, within the space of 30 days from the date of the service of the notice. Mr. Raj Narain urges that the Committee's action was arbitrary and unreasonable, but I am unable to agree with him. As the learned Divisional Judge says, the Municipality must vindicate its authority and the fact that a

man has erected without having applied for sanction is a sufficient reason to order demolition. Such action is open defiance of the authority of the Municipality. In *Bhawani Shankar v. Surrey City Municipality* (1), it was held that a municipality can in their discretion order a building erected without sanction to be altered or demolished, and that notice of demolition cannot be questioned on the ground that the building otherwise conforms to the orders of the Municipality or can be altered so as to be made to conform to them.

The last point raised by Mr. Raj Narain was that the notice was illegal inasmuch as it required the plaintiff to demolish the building within 15 days, the time specified in section 195 being 30 days. I find that this was one of the grounds taken by the plaintiff in the first court, but it is clear that it was not pressed in the Lower Appellate Court, for in his judgment the learned Divisional Judge says, "nothing has been pointed out to me in the notice which is either ambiguous or illegal." The record shows that the notice was sent in duplicate. In the one which was kept by the plaintiff the period entered was 15 days, but that in the copy signed by him and returned to the Committee, the period was shown as 30 days. Plaintiff himself in endorsing the notice brought this discrepancy to the notice of the Municipal Committee and asked to be informed which period was correct. In my opinion the fact that the period was wrongly stated in one copy of the notice is not of itself sufficient to entitle the plaintiff to the relief asked for. No doubt if the Committee had within 15 days sought to demolish the building under section 220 of the Act, the plaintiff might have objected, and have asked to be allowed the full term of 30 days. He did not, however, object to the notice on this ground. Mr. Raj Narain asks that if a perpetual injunction be not granted to his client, it may be declared that the notice is illegal and the Committee cannot take any action, therefore,

and that it should be forced to issue a fresh notice in accordance with section 195 of the Act. I am not, however, prepared to accede to this request. I do not consider the plaintiff has in any way been prejudiced by the clerical error in one copy of the notice. The copy returned to the Municipal Committee gives the time correctly as 30 days, and the Committee would not have sought to take action under section 220 of the Act until that period had expired. The appeal is, therefore, dismissed with costs.

Sind Judicial Commissioner's Court.

PRESENT :

MR. FAWCETT, J.C. AND MR. CROUCH, A.J.C.
LUBINDARAM *walad* CHUDERMAL—Applicant

vs.

THE KARACHI MUNICIPALITY—Opponent.

*Bombay District Municipal Act (III of 1901), S. 151—
Essential ingredients of offence—mere disobedience of notice
not conclusive evidence of offence.*

Prima facie in order to render a person liable to conviction and punishment under Section 151 of the Bombay District Municipal Act (III of 1901), it must be proved (1) that a notice has been given him under sub-section (1), and (2) that he uses the place in question or permits it to be used in such a manner as to be a nuisance to the neighbourhood or dangerous to life, health or property. All the essential ingredients of the offence must be proved and the mere fact that notice in due form was given regarding the user of the place on a particular date cannot be conclusive evidence that there has been user of the place in such a manner as to be a nuisance after that date.

Criminal Revision Application against the order of the
Additional City Magistrate, Karachi.

Mr. A. M. Advani for the Applicant.

The Public-Prosecutor for the Opponent.

The facts of the case appear fully from the judgment.

JUDGMENT.

FAWCETT, J. C.—This is an application for revision of an interlocutory order passed by the Additional City Magistrate,

Karachi, in a case instituted against the applicant under section 151 (2) of the Bombay District Municipal Act. In the trial, the complainant contended that it was sufficient for a conviction under that sub-section to prove that the Municipality had issued a written notice to the accused, under sub-section (1) and that the accused has disobeyed it. Accused's pleader on the other hand contended that it was essential for the prosecution to prove that the place in question was used in such a manner as to be a nuisance to the neighbourhood or dangerous to life, health or property, and that it was open to the defence to adduce evidence to the contrary. The Magistrate has passed an order upholding the contention of the Municipality, and has adjourned the further hearing of the case in order to enable accused to apply to this Court in revision.

The Public-Prosecutor raised a preliminary objection to this Court's accepting such an application, and said it would be a bad precedent for this Court to give an opinion on a point of law arising in a trial before the trial was completed. If the point of law only rose on certain facts which were in dispute, it would, no doubt, be premature to allow it to be raised and decide it at this stage, but in the present case it is admitted by applicant's pleader that a valid notice under sub-section (1) of section 151 was served on the accused and that he disobeyed it. Accordingly the question whether the accused can legally raise the plea in question as a defence to the charge brought against him is one which directly arises, is independent of any disputed facts, and should obviously be decided before evidence on the subject is actually taken by the Magistrate. We think, therefore, that this is an exceptional case of a kind in which this Court can properly interfere with an interlocutory order in exercise of its wide revisional powers, and that the determination at this stage of the point of law arising will be for the convenience of all parties concerned.

Sub-section (2) of section 151 runs as follows:—
“Whoever after notice has been given under sub-section, uses any place or permits it to be used in such a manner as to be

a nuisance to the neighbourhood or dangerous to life, health or property shall be punished," etc. *Prima facie* in order to render a person liable to conviction and punishment it must be proved (1), that a notice has been given under sub-section (1), and (2) that he uses the place in question or permits it to be used, in the manner specified. There is no reason for construing it differently than if it appeared in the Penal Code. The fact that under sub-section (1) a notice cannot legally issue unless it is shown to the satisfaction of the Municipality that the use of the place is a nuisance or dangerous is one which clearly cannot affect the construction of sub-section (2). If the opinion of the Municipality was intended to be conclusive and mere disobedience to the notice was intended to be punishable, the Legislature would have used some such words as "in contravention of the terms of such notice" instead of the words "in such manner as to be a nuisance to the neighbourhood or dangerous to life, health or property." A comparison of this sub-section with sections 150 (3) and 155 clearly shows that there was no such intention on the part of the Legislature. In cases under section 151 (1), the Legislature no doubt thought it desirable that a person affected should be allowed an appeal to the Courts from the opinion of the Municipality if prosecuted for disobedience.

The rulings in *Ahmedbad Municipality v. Maganlal Khushaldas* (1) and *Emperor v. Raja Bahadur Shivalal* (2) do not apply to this case. The former deals with sub-section (5) of section 96 of the Bombay District Municipal Act, under which mere disobedience to the provisions or orders referred to in that sub-section so long as such orders are not *ultra vires*, is punishable; and the latter deals with section 377 and 471 of the City of Bombay Municipal Act, 1888, under which the Commissioner's opinion is conclusive and mere failure to comply with his requisition is punishable.

1. 9 Bom. L. R. 156.

2. 34 Bom. 346; 5 Ind. Cas. 860.

Mr. Raymond argued that sub-section (2) of section 151 only referred to cases coming under clause (ii) of sub-section (1), but there is nothing in sub-section (2) to support this argument; on the contrary the words "after notice has been given under sub-section (1)" and its general wording leave no doubt whatever that it is intended to cover all cases in which a notice may be issued under sub-section (1).

Section 155 cannot, of course, be relied on in this case firstly, because accused is being prosecuted not under that section but under 151 (2), and secondly, because the disobedience or failure to comply with a direction in a notice issued under sub-section (1) of section 151 is an offence punishable under another section, viz., section 151.

For the above reasons we set aside the order of the Magistrate refusing to enter into the question whether the place (whose further use has been prohibited by the Municipality) is proved to be used, or permitted to be used, by the accused in such a manner as to be a nuisance to the neighbourhood or dangerous to life, health, or property, and direct him to proceed with the trial in accordance with the law as laid down in this judgment.

CROUCH, A. J. C.—I concur. The view taken by the Magistrate is that the duty of the Court is merely to inflict punishment for an offence of which the Municipality have already found the accused guilty: the question whether or not he is guilty, the Magistrate has refused to try. It seems, therefore, a suitable case in which to exercise what I believe to be the indisputable power of this Court to interfere with an interlocutory order.

The offence with which section 151 (2) deals is the using of a place in a certain manner after notice has been given under section 151 (1). The mere fact that notice in due form

was given regarding the user of the place on a particular date cannot be conclusive evidence that there has been user of the place in such a manner as to be a nuisance after that date. All the essential ingredients of the offence must be proved as in any other criminal trial, and the Magistrate must be satisfied by suitable evidence that accused has been guilty of causing nuisance after receipt of notice duly given under sub-section (2).



Madras High Court.

PRESENT:

MR. JUSTICE SADASIVA AIYAR AND MR. JUSTICE NAPIER.

THE CORPORATION OF MADRAS—Appellant

vs.

MOHANLAL SOWCAR AND OTHERS—Respondents.

Sunshade over a public drain—Drain and the sunshade within private limits—Power of the Corporation to remove the same under Sec. 248 of Act. III of 1904—Question whether sunshade interferes or not with the work of cleaning, etc. immaterial.

In a suit brought by the plaintiff for a declaration that the land in front of his house through which a public drain passed was his land and for an injunction restraining the Corporation from interfering with a sunshade in front of his house which overhung the drain, it was *held* that the President had ample powers to call upon an owner of a building in a public street to remove a sunshade in front of his house which overhangs a public drain.

Held also that a public drain is part of a public street and any projection over the drain space is a projection in a public street.

Held further that the fact that the projection does not interfere with the proper cleaning and maintaining the drain as a drain is immaterial so long as it is a projection in a public street.

Appeal No. 1 of 1914 against the decree of the City Civil Judge in C. S. No. 473 of 1911.

Mr. P. Duraiswami Aiyangar FOR THE APPELLANT.

Messrs. T. Ethiraja Mudaliar and Mahomed

Ibrahim Sahib FOR THE RESPONDENTS.

JUDGMENT:—The finding of the lower court that the plaintiff land (Ex. D. D.) belongs to the plaintiff subject to certain rights in the Municipality cannot and is not seriously attacked by the appellant's learned vakil. Under the definition of "Public street" in Section 3, Clause 27, of the Presidency Municipalities Act, the space covered by

the drain, included in the public street vested in the Municipality. The sunshade of the plaintiff's house overhangs this drain space forming part of the public street. Section 248 (1) of the Act empowers the President to give notice to the owner of any building to remove any projection, made against or in front of such building in any public street. Assuming, without deciding, that the phrase "in any public street" in the section qualifies the word "building" and not the word "projection" (see *Acchayya garu v. The Municipal Council of Ellore*, XIX M. L. J., 757) we think that the word "projection" itself and the context imply that the thing which is indicated by that word must project into or over the space covered by the public street. The sunshade in question admittedly does project over the drain space and hence it is a projection, which the President is entitled to remove after notice. We are unable to accept the view of the learned City Civil Judge that if the sunshade does not interfere with the repairing and proper management of the drain, the President is not empowered to have it removed. The words of Sec. 248 (1) do not fetter the President's power in this respect and only require that the thing ordered to be removed should be a projection as construed above.

We therefore modify the decree of the C.C.J. by directing the deletion of the following words from that decree :

- (a) from the words 'either to direct' up to 'plan or'
- (b) the words 'or the sunshade, and',
- (c) the paragraph beginning 'and it is ordered and decreed'

The parties will bear their respective costs in this appeal.

[House of Lords.]

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H.L.(E.)
1913.
Decr. 12

METROPOLITAN WATER BOARD.....APPELLANTS;

AND

AVERY.....RESPONDENT.

*Water—Supply—London—Charges—Domestic Purposes
—Trade Purposes—Public House—Catering Business—Water
used for the Preparation of Luncheons—Metropolitan Water
Board (Charges) Act, 1907 (7 Edw. 7, c. clxxi), ss. 8, 25.*

Water supplied under the Metropolitan Water Board (Charges) Act, 1907, to the licensee of a public house where luncheons were served was used for cooking the food and washing up the plates and dishes:—

Held, that the water was used for domestic purposes within the meaning of s. 25 of the Act and must be charged for on that footing.

Decision of the Court of Appeal (1914) 1 K. B. 221, affirmed.

Per Lord Dunedin: The statement of Buckley L. J. that “the test” of domestic purposes “is not whether the water is consumed or used in the course of the trade but whether the user of the water is in its nature domestic” approved.

Appeal from an order of the Court of Appeal¹ affirming an order of a Divisional Court which reversed a judgment of the Westminster County Court Judge².

The respondent was the occupier and licensee of a public-house known as the Crutched Friars, No. 1, John Street, Minories. Under s. 8 of the Metropolitan Water Board (Charges) Act, 1907, (7 Edw. 7, c. clxxi.), she obtained from the appellants a supply of water for domestic purposes and paid to them water rates at the ordinary rate of 5 per cent. on the value of the premises. The respondent, besides supplying liquor,

* PRESENT: EARL OF HALSBURY, LORD DUNEDIN, and LORD ATKINSON.
LORD KINNEAR was present during the argument only.

¹ (1914) 1 K. B. 221.

² (1913) 2 K. B. 257.

served between twenty and thirty luncheons daily upon the premises, and this service involved an additional use of water beyond what would be used in an ordinary public house, for cooking, washing dishes, plates, etc., and for scrubbing floors.

The appellants sought to impose upon the respondent an additional charge of 2s. 6d. per quarter in respect of the supply of water used in connection with the serving of luncheons, and they commenced an action against the respondent in the Westminster Court to recover the sum of 5s. in respect of water supplied to the respondent for the purposes of her catering business.

The substantial question between the parties was whether the water used for this business was a supply of water for domestic purposes or for the purposes of a trade or business within the meaning of the Metropolitan Water Board (Charges) Act, 1907¹. The County Court Judge held that it was a

¹ Metropolitan Water Board (Charges) Act, 1907, s. 25: "In and for the purposes of this Act the expression 'domestic purposes' shall be deemed to include waterclosets and baths constructed or fitted so as not to be capable of containing when filled or filled up to the overflow or waste pipe (if any) more than eighty gallons but shall not include a supply of water for any of the following purposes (namely):—

- "Steam gas motor and other like engines;
- "Railway purposes;
- "Ventilating purposes;
- "Working any machine or apparatus;
- "Consumption by or washing of horses or cattle;
- "Washing carriages or other vehicles;
- "Watering gardens by means of any outside tap or any hose tube pipe sprinkler or other like apparatus;
- "Fountains or any ornamental purpose;
- "Cleansing sewers and drains;
- "Cleansing and watering streets or roads;
- "Fire extinction;
- "Flushing drains by means of any apparatus discharging automatically;
- "Public pumps, baths or washhouses;
- "Any trade manufacture or business;
- "Any bath constructed or fitted so as to be capable of containing when filled or filled up to the overflow or waste pipe (if any) more than eighty gallons."

supply for the purpose of a trade or business and gave judgment for the appellants for the amount claimed.

The Divisional Court (Channell and Bray JJ.) reversed the decision of the County Court Judge and held that the water was used for domestic purposes, and the decision of the Divisional Court was affirmed by the Court of Appeal (Vaughan Williams, Buckley, and Hamilton L. JJ.).

1913, Nov. 14. *Sir R. Finally, K. C., and Clavell Salter, K. C.* (with them *J. Goodland*), for the appellants. Although water may be used for domestic purposes, colloquially speaking, yet, if it is used for the purpose of a trade or business, it is not used for domestic purposes within s. 25 of the Metropolitan Water Board (Charges) Act, 1907. That section expressly excludes from domestic purposes, among other things, the purpose of any trade or business. Many of the enumerated exceptions are inserted irrespective of the colloquial use of the term "domestic purposes" and are purely arbitrary. If water is supplied to a trader to enable him to earn the reward of his trade it is used for trade purposes. The additional water required for cooking the food in connection with this catering business and for cleansing the plates and dishes on which the food is served is water used for the purpose of that trade or business. It is not a mere ancillary use. To adopt Lord Loreburn's language in *Colley's Patents, Ltd. v. Metropolitan Water Board*¹, this is a "supply for use in the trade, manufacture, or business." The decision in that case was that the water was supplied for domestic purposes because it was a supply for the mere personal convenience of the men employed in the factory. Section 25 in a clumsy and inartificial way points to the conclusion that a supply of water for domestic purposes is really confined to a supply for the personal convenience of the inmates of the house to which the water is supplied whether

¹ (1912) A. C. 24, at p. 31.

they sleep there or are there for the working day. Thus baths of certain dimensions and waterclosets erected as adjuncts to a house are, to use the slovenly and inaccurate language of the Act, included in domestic purposes, but if erected for the purposes of being let out on hire they would not be so included. Therefore Buckley L. J.'s test that you must consider the character of the purpose for which the water is used and not the character of the premises in which it is used or the character of the persons using it is fallacious and misleading, for according to that test public baths and waterclosets would be domestic purposes. The first part of the section is not a definition of domestic purposes, and the purposes enumerated in the subsequent clauses of the section are not exceptions from domestic purposes, but are illustrations of what for the purposes of the section domestic purposes shall not include. Nothing could be more domestic than washing clothes, but washing clothes for people in general—people outside the house—would not be a domestic purpose within the section because a trade purpose. So here the increased demand for water for the supply of luncheons is not for a domestic purpose, but for the purpose of the business of a restaurant. The words of s. 25 “any trade, manufacture, or business” do not import that the trade or business must be *ejusdem generis* with “manufacture.” This is illustrated by s. 9, where the words are ‘trade or business,’ and by s. 20, where the language is again slightly varied. *Pidgeon v. Great Yarmouth Waterworks Co*¹, the boarding-house case, is distinguishable on the ground that the supply was to the inmates of the house. In *Smith v. Muller*², a boiler used for heating an office in which the owner did not reside was properly held to be used for domestic purposes. In *Barnard Castle Urban District Council v. Wilson*³, water supplied to a swimming bath for the use of a charity school was held not a supply for domestic purposes.

¹ (1902) 1 K. B. 310.

² (1894) 1 Q. B. 192.

³ (1902) 2 Ch. 746.

In *South-West Suburban Water Co. v. St. Marylebone Union* ¹, it was held that a school was a dwelling-house and might be entitled to a domestic supply; and in *Frederick v. Bognor Water Co.* ², water used for the ordinary domestic purposes of the inmates of a school was held to be a supply for domestic purposes. Both those cases are distinguishable upon the ground above stated. Again, in *South Suburban Gas Co. v. Metropolitan Water Board* ³, water supplied for the sanitary convenience of the workmen employed at the plaintiffs' gas-works was held a domestic supply. In *Metropolitan Water Board v. London, Brighton and South Coast Ry. Co.* ⁴, water supplied for water closets for passengers and for the staff at a railway station was held a supply for railway purposes. It may be doubted whether that decision is consistent with *Colley's Patents, Ltd. v. Metropolitan Water Board* ⁵, but it does not affect the present case. On the admitted facts and upon the construction of s. 25 the supply of water in this case is a supply for trade purposes. The water is not supplied for the use of the inmates of the house and it is directly used in the trade or business.

Walter Ryde, K. C., and *E. M. Konstam*, for the Respondent were not called upon.

The House took time for consideration.

Dec. 12. EARL OF HALSBURY. My Lords, this case turns upon the construction to be given to the 25th section of the Metropolitan Water Board (Charges) Act, 1907 (7 Edw. 7, c. clxxi).

By the section it is enacted that the expression "domestic purposes" shall be deemed to include water closets and baths within certain capacities, and then proceeds to exclude from that expression a large number of categories, among which

¹ (1904) 2 K. B. 174.

² (1909) 1 Ch. 149.

³ (1909) 2 Ch. 666.

⁴ (1910) 2 K. B. 890.

⁵ (1912) A. C. 24.

are to be found "any trade, manufacture, or business." If each of these words is to be taken as establishing a distinct category, that clause is unskilfully drawn, and indeed its main purpose is apparently not so much to define what are domestic purposes, and the result of giving the meaning to the phraseology of the defining section which is sought to be given to it in this case would be to enact what it is, I think, absolutely certain that the Legislature never intended. I think *Colley's Case*¹ is decisive of this case if one looks at the meaning of Lord Loreburn's judgment; also Channell J.'s judgment in *Pidgeon v. Great Yarmouth Waterworks Co.*² very clearly points out the mode in which the increased consumption of the water is intended by the Legislature to be paid when used for domestic purposes.

My Lords, I cannot help adding that I think no ordinary person would have misunderstood the meaning of what was intended to be enacted but for the defining section, which, as I have said, is not a defining section at all.

LORD DUNEDIN. My Lords, the question in this case is whether the water which is used by the occupier of a public house in preparing luncheons for customers and in washing plates and dishes is water used for domestic purposes. The two judges of the Divisional Court and the three judges of the Court of Appeal have unanimously held that it was. With that judgment I agree. The point depends upon the construction to be put on the words "domestic purposes" as used in the Metropolitan Water Board (Charges) Act, 1907, and the argument has ranged round the expressions used in s. 25 of that statute.

Now, it is first of all to be noticed that s. 25 is not in the true sense of the word a definition section. It is not only that, as Lord Loreburn L. C. said in *Colley's case*³, it is

¹ (1912) A. C. 24.

² (1902) 1 K. B. 310.

³ (1912) A. C. 24.

couched in slovenly and inaccurate language, but it does not even profess exhaustively to define. It begins by taking "domestic purposes" as a known expression; it then goes on to say it shall be "deemed to include" two specific uses, and then it proceeds to give an enumeration of certain uses it is not to include—not an exhaustive definition, but a series of warning notes, so to speak, against an undue inflation of the term "domestic purposes." The particular warning note that is here appealed to by the appellant is the expression [supply for] "any trade, manufacture, or business."

Now, what is the criterion which enables us to fix whether the water is supplied for a trade, manufacture or business? It does not settle it to point out that a trade, etc., is carried on in the premises where the water is supplied. That is absolutely clear from the terms of s. 9, which contemplates a supply of water for domestic purposes being furnished to a building where not only a trade is carried on, but where the occupation is solely for the purposes of the trade, i.e., not residential at all, and *Colley's case*¹ in this House is a direct authority. Nor will it do to say that the persons who use it on the premises only go there for the purposes of a trade being carried on. *Pidgeon's case*² (the boarding-house case) is an authority against that. It seems to me that there are just two alternative views left. Either the criterion is to see whether the purpose in connection with the trade is domestic or non-domestic in itself, the criterion adopted by the courts below and very clearly expressed in the judgments of Bray J. and Buckley L. J., or to say, as the appellants contend, that every use of water, however domestic in its nature, that appears as a step, however insignificant, in a trade operation is use of water for a trade and therefore non-domestic.

The great objection to this latter view is that it goes so far and leads to such astounding results as to make it

¹ (1912) A. C. 24.

² (1902) 1 K. B. 310.

flagrantly in conflict with what I venture to call the common-sense view of the Act. The Appellants themselves seem to have felt this, inasmuch as they admit that they are not in use to exact from public houses any thing more than a domestic rate. Yet unless all liquors are consumed neat and the glasses and mugs never washed, it is clear that the water used in public houses, is according to their method of definition, a trade use. Nor does the matter stop here. Not only does all water in hotels and boarding-houses for the cooking of provisions (a severe narrowing down of *Pidgeon's case*¹) follow the same fate, but no retail shop-keeper could use a damp sponge to clean dusty goods without becoming liable to a trade rate for the water so used.

On the other hand, the test of the quality of the use in itself—so tersely put by Buckley L. J., “The test is not whether the water is consumed or used in the course of the trade, but whether the user of the water is in its nature domestic”—is not only easy of application but is automatic in checking abuse. For purposes truly domestic cannot be amplified, and when the consumption on such heads is large it is invariably attended by an increase in the rating value of the premises which brings with it an increased water rate.

The only seeming puzzle is introduced by the illustrations, to which Sir Robert Finlay clung hard in his interesting argument—an establishment of public baths, or public water closets, carried on for a profit. The use of a bath or of a water closet is, says he, in its nature a domestic purpose, and therefore the test of domestic purposes by nature breaks down.

My Lords, I think such extreme cases—for such establishments, at least of the second class, are not common—may be left to be dealt with till they arise within the metropolitan area. But when they do I think the solution may be suggested by a phrase in the judgment of Bray J. He says: “If the water is used for a purpose which is common to all domestic

¹ *Supra*.

establishment it is none the less used for domestic purposes because it is ancillary to a trade, manufacture or business." In the case supposed the use of the water would not be ancillary to the business, it would be the business itself, and I should personally be prepared to hold,—again, I venture to think, taking a common sense view of the situation—that the trade use of the water was so pre-eminent that it could not be said that in those establishments there was truly a use for a domestic purpose at all.

I think the appeal should be dismissed. I concede that the case is not covered by the actual judgment in the case of *Colley*¹ in this House; but I believe the views I have expressed are in entire concordance with the spirit of that judgment.

LORD ATKINSON. My Lords, in this case the County Court Judge came to the conclusion that this catering business involved the use of a considerable quantity of water in excess of what would be used if the respondent had not carried on that business, that she could not carry it on without using this extra quantity of water, and held that the water was being used for the purposes of a trade or business, as distinguished from domestic purposes, within the meaning of this section.

This was the substantial question raised. Subsidiary questions were also raised, but have not yet been discussed on this appeal. The substantial question is obviously of vast importance.

The matter for decision is the construction of the 25th section of the statute already mentioned, and ultimately, I think, the meaning of the words, "any trade, manufacture, or business" used in it.

The Master of the Rolls, in speaking of this section in *Metropolitan Water Board v. London, Brighton and South Coast Ry. Co.*² says that "a more confusing section can scarcely be imagined." And Lord Loreburn, in the case of

¹ (1912) A. C. 24.

² (1910) 2 K. B. 890, at p. 896.

*Colley's Patents, Ltd. v. Metropolitan Water Board*¹ described it as "couched in slovenly and inaccurate language."

Criticisms even more severe than these would, in my view, be well deserved. Your Lordships were referred to many authorities decided before 1907 on statutes dealing with water works and water supply to houses, somewhat similar in their provisions to those of this Act of 1907. It must, I suppose, be assumed that the draftsman who drafted this section had some intelligent appreciation of the points ruled, and of the principles laid down in these cases, and one would not unnaturally expect that when this last Act came to be drafted its framers would have made their meaning plain and clear, instead of leaving it obscure, as they have done.

It has been many times pointed out that this 25th section does not contain any complete definition of "domestic purposes," and that several of the purposes excluded by it are not true exceptions at all, that is, are not purposes which but for the exclusion would be covered by the words "domestic purposes," used in any rational sense. For instance, cleansing and watering streets or roads, railway purposes, public pumps, etc. And it is impossible to discover what principle, if any, guided the framers of the Act in selecting the purposes excluded.

According to the ordinary meaning of language, I take it that water supplied for domestic purposes would mean water supplied to satisfy or help to satisfy the needs, or perform or help in performing the services, which, according to the ordinary habits of civilized life, are commonly satisfied and performed in people's homes, as distinguished from those needs and services which are satisfied or performed outside those homes, and are not connected with, nor incident to, the occupation of them.

It is plain from the provisions of the 7th and 8th sections of this statute that it is the character of the purpose for which

¹ (1912) A. C. 24.

the water is supplied, and not the character of the premises to which it is supplied, that is the crucial consideration in determining whether the water is supplied for domestic purposes or not.

Again it is plain from these sections that it is not at all necessary that the persons for whose use the water is supplied should reside on the premises supplied. In each of the following cases decided on this statute of 1907 as well as on other statutes whose provisions were somewhat similar, it was held that residence on the premises supplied was no test as to whether water was supplied for domestic purposes or not: *Smith v. Muller*¹, *South West Suburban Water Co. v. St. Marylebone Union*², and *South Suburban Gas Co. v. Metropolitan Water Board*.³

The case of *Colley's Patents, Ltd. v. Metropolitan Water Board*⁴ is to the same effect, as the staff who used the sanitary appliances for which the water was supplied did not reside on the premises. No person slept in them, and no portion of them was charged with the payment of inhabited house-duty. Now, if this be the law, as I think it clearly is, I confess I am unable to discover any sound principle upon which the case of *Pidgeon v. Great Yarmouth Water Works Co*⁵ can be distinguished from the present. There the occupier of the premises supplied carried on therein the business of a lodging-house keeper. His guests were lodged as well as boarded. The water was used for the purposes of cleansing, cooking, drinking, and sanitary purposes. These are obviously domestic purposes. The preparation and supply of food, the cleansing of the appointments necessary to serve it, the cleansing of the rooms in which the food is served, the supply of water to be drunk with the food, the supply for flushing lavatories, are all domestic requirements. The guests

¹ (1894) 1 Q. B. 192.

² (1904) 2 K. B. 174.

³ (1909) 2 Ch. 666.

⁴ (1912) A. C. 24.

⁵ (1902) 1 K. B. 310.

paid for their board and lodging, and they resorted to the house solely for the purpose of being boarded and lodged. The water was supplied directly in and for that business, and was used in the conduct of it.

It was held that the water was supplied for domestic purposes, but if there be no virtue in residence as a test, it would appear to me that, on principle, precisely the same result should be arrived at if the guests had merely boarded on the premises and not lodged. And I think that the business of providing, for reward, food for the persons who resort to the occupier's premises is as much a business and no more than is the business of not only providing food for them but lodging them in addition. The fact that the occupier could probably feed more people on his premises than he could feed and in addition lodge cannot, in my view, affect the question.

It may well be that Channell J. was quite right in saying as he did in that case (at p. 315 of the report), that the use of water for the domestic purposes of the inmates of the house is the thing which is covered by the water rate based on the annual value of the house, that "it is a rough way of measuring the amount of water likely to be used for domestic purposes by the number of the inmates which the house is capable of containing and accommodating." But the annual value of the house would as obviously be increased by its being turned from an unprofitable dwelling house to a profitable eating house as by turning it from an unprofitable dwelling house into a profitable board and lodging house. And, in a rough way, the Water Board would be remunerated as surely in the one case as in the other. Upon the following page the learned Judge said: "I think that, although the supply for domestic purposes is paid for on the annual value, it does not make any difference whether the inmates of the home are guests who are entertained by the owner at his own expense, or whether they pay for their board and lodging, or whether they are pupils whose parents pay for their board and lodging, or

whether they are paupers for whom the parish pay. All those cases have been dealt with and decided; and it seems to me that our decision is governed by authority."

In *South-West Suburban Water Co. v. St. Marylebone Union*¹ the defendants were the owners and occupiers of premises in which they had erected and maintained schools for the education of children from the work-house of the parish. The defendants required the plaintiffs to supply (on the usual terms) water to this school for domestic purposes, which the latter declined to do. The main question for decision was the right of the defendants to have this supply. At p. 180 Buckley J., as he then was, expressed himself thus: "But, granting that the schools are a dwelling-house, the next contention of the plaintiffs is that these premises have not and cannot have domestic purposes because that which is carried on upon the premises is a business, and that all the supply is for the purposes of that business. . . . I agree that these premises are used to carry on a business. If I were to define the business carried on I should say that it is the business of providing for, maintaining, and training pauper children, and that this is none the less a business because it is carried on, not for profit, but on the contrary, at a large expense. . . . But, although that which is carried on upon the premises is a business, it is, in my opinion, perfectly consistent that in business premises water may be wanted for domestic purposes. The question is, what is the character of the purpose, not what is the character of the place of user."

I think the decisions in this case and in the case of *Pidgeon v. Great Yarmouth Waterworks Co.*² were perfectly right; but if the business carried on in this school was in fact the providing for and maintenance of pauper children, it is, I think, clear that the water supplied was at the same moment supplied both for domestic purposes and business

¹ (1904) 2 K. B. 174.

² (1902) 1 K. B. 310.

purposes. This, indeed, must be so, inasmuch as the very essence of the business carried on was to supply those needs and render those services.

And when one has to construe this clumsily drawn and puzzling statute, one may well ask oneself, if the water supplied was at the same moment used, and intended to be used, for both purposes, and it is impossible to separate the one purpose from the other, which consideration is to prevail? Is the domestic purpose to be treated as the real and dominant purpose, and the business purpose to be ignored, or vice versa?

I confess that the answer to this question which commends itself to my mind is this: that the business of maintaining these pauper children, or a business which consists in providing cooking and supplying food to persons who resort to the occupier's premises for the very purpose of having that food supplied, is not a "trade, manufacture, or business" within the meaning of the excluding clause of this 25th section.

Sir Robert Finlay admitted, on the principle laid down in *Colley's Patents Case*¹, that water used to supply food to, or provide some of the conveniences of civilized life for, the staff engaged in a factory would rightly be held to have been supplied for domestic purposes. He further, as I understood, admitted that if food was supplied to persons who resorted to the occupier's premises for some lawful purpose of business or pleasure, the water used to cook that food would be properly held to have been supplied for domestic purposes. I think this contention is absolutely sound. He went on, however, to contend, as it was absolutely necessary for the appellant's case that he should contend, that the result would be different if the only business carried on in the occupier's premises was the supply of food and if the only purpose for which the persons resorted to those premises was to be supplied with food. In the one case he said the water would be used in the business only incidentally, as an ancillary for the convenience of

¹ (1912) A. C.

customers or of the staff; in the other it would be used directly for the very purposes of the business itself. I cannot think that the framers of this statute ever intended to base the distinction between domestic purposes and trade purposes on such a narrow foundation as this.

Business in its widest sense means a "state or quality of being busy." "The state of being busily engaged in any thing." "Industry, diligence." "Occupation, profession or trade, etc." Murray's (the Oxford) Dictionary, Vol. I. p. 1205.

Section 9 provides for a rebate in certain cases where any house or building, or any part thereof, is occupied solely for "the purposes of any trade or business, or of any profession or calling, by which the occupier seeks a livelihood or profit." It is obvious that a calling by which a person "seeks a livelihood or profit" may be a business in a very true sense, or a trade and unless the word "calling" is used in this section to denote something akin to a profession, it would in this instance denote a business. If its meaning be not so restricted, then, unless there be a redundancy in the section, this word "business" must be taken in a restricted sense. The obligations and privileges of the Board are, therefore, apparently these: They are bound under s. 7 to supply water for domestic purposes, when required without meter; they are equally bound, under s. 16, to supply, when required, water by meter for all purposes other than domestic; and under s. 20 they have the privilege of refusing to supply, otherwise than by measure, any house or building any part of which is used for any "trade or manufacturing purpose."

It would be but natural that a provision should be introduced into s. 25 to guard the privilege thus conferred by s. 20, and prevent the Board under any pretence, or by any device, from being deprived of the benefit of it. As the Board are bound to supply water for domestic purposes, and are not bound to supply water otherwise than by meter for purposes of trade or manufacture, the two provisions would be brought

into harmony by excluding the purposes of trade or manufacture from the meaning of domestic purposes, and would none the less be so if the word "business" was added in s. 25 with the object of covering businesses of the nature of trade or manufacture.

In my view, the principle of *noscitur a sociis* applies to this provision of s. 25. I think the business indicated is a business of the nature and character of some manufacture—or trade in the nature of manufacture—in which, to use Channell J.'s words, the water is, as it were, the raw material of the trade, not like the business carried on in this eating-house. Sir Robert Finlay pressed in his argument the case of public laundries. He urged that they render services for their customers which are usually rendered in one's home. I do not think the cases are *in paribus* and it is unnecessary to decide the point.

I am clearly of opinion that the purposes for which the water was in this case supplied were in their nature and character domestic, and the business carried on by the respondent was not a business within the meaning of s. 25. I therefore think that the judgment appealed from was right, and the appeal should be dismissed with costs.

Order of the Court of Appeal affirmed and appeal dismissed with costs.

Lords' Journals, December 12, 1913.

Solicitor for appellants; *Walter Moon*.

Solicitors for respondent: *Maitlands, Peckham & Co.*



Sind Judicial Commissioner's Court.

Civil Appeal No. 3 of 1913.

September 3, 1914.

PRESENT.

MR. FAWCETT, J. C.

THE MUNICIPALITY OF TATTA....*Defendant, Appellant.*

vs.

ASSANMAL CHANDOOMAL....*Plaintiff, Respondent.*

Master and servant--Contract of service--Bombay District Municipal Act (Bombay Act III of 1901), S. 167, whether applicable to suits on contract

If no custom nor stipulation as to notice exists and if the contract of service is not one which can be regarded as a yearly hiring, the service is terminable by reasonable notice.

Section 167 of the Bombay District Municipal Act, 1901, does not apply to an act on brought on a contract.

Having regard to the standard generally adopted in England for "clerks in superior position," a Municipal Secretary in India is entitled to three months' notice.

Ranchordas Mooraji vs. Municipal Commissioner for the City of Bombay, 25 B. 387 at p. 393=3 Bom. L. R. 158; *Municipality of Faizpur vs. Nanak Dulat Shet*, (1897) P. J. 140, followed.

Appeal against the Decree of the Sub-Judge, Tatta. The facts of the case appear fully from the judgment.

Mr. Hassaram Jashanmal *for the Appellant.*

Mr. Kimatrai Bhojraj *for the Respondent.*

JUDGMENT :—Plaintiff was formerly Secretary of the Tatta Municipality (defendant). On the 28th August 1911, a proposal was brought before the general meeting of the Municipality by the acting Mukhtiarkar, Mr. Chandoomal, that, as the expenditure of the Municipality was high and its income little, the post of Secretary should be abolished for the present, and this proposal was carried (Exhibit No. 18). Mr. Chandoo-

mal, as acting Mukhtiarkar, was an ex-officio member of the Municipality (as is admitted by Respondent's pleader), but there is nothing to show that he had been elected as Vice-President in place of the permanent Mukhtiarkar for whom he was acting, as should have been done under sec. 23 (8) of the Bombay District Municipal Act, 1901. There is, however, no reason to disbelieve Mr. Chandoomal's evidence that, though he was not formally elected, yet he was tacitly accepted as Vice-President, it being understood that the Mukhtiarkar for the time being is the Vice-President. This is corroborated by the extracts of resolutions, which have been filed in this case, see in particular Exhibit 18, where Mr. Chandoomal is referred to as the acting Vice-President. In the circumstances, there was, I think, a tacit election of Mr. Chandoomal as Vice-President, and the defect of there being no formal election is covered by section 38 (I) of the Act. However that may be (and for reasons I give subsequently it is not, in my opinion, a material point in this case), Mr. Chandoomal certainly performed the duties of Vice-President, and in that capacity on the 10th September 1911 wrote as follows to the plaintiff:—
“ The Municipality having abolished temporarily the post of the Secretary, his services are no longer in requirement; Mr. Assanmal (plaintiff) is, therefore, directed to deliver over charge to the Assistant Secretary by to-morrow, i.e., Monday the 11th instant afternoon ” (Exhibit No. 29). Accordingly on the 11th September, the services of the plaintiff were dispensed with, and he was paid his wages up to date. Plaintiff then applied to be given a post of clerk in the Municipality, on the grounds that he was being driven out without fault and he had given up a permanent post in order to take up the Municipality service, but this application was refused by the Municipality on 12th September 1912 (Exhibit No. 20). The plaintiff then complained to the Collector about his removal from the post of Secretary, and correspondence ensued thereon in the course of which the validity of the resolution abolishing the post of Secretary appears to have been questioned by the Collector, on the ground that it was

an appointment included in the authorised municipal staff by rules under section 46 (b) (ii) of the Act, which could not be altered without the sanction of the Commissioner. A proposal was therefore made that in the circumstances, some settlement should be come to with the plaintiff and the Municipality were asked to decide (1) whether they wanted to keep plaintiff in the service or not, and (2) whether the President should be authorised to effect a settlement with him, which it was suggested might take the form of his being given pay for the period intervening between his relinquishing charge on the 11th September 1911 and the date on which he is offered the settlement. This was discussed at a meeting held on 20th February 1912, and it was then resolved that Mr. Assanmal should not be kept in municipal service, and that the authority mentioned should be conferred on the President, but that the final decision should be submitted to the Municipality for sanction (Exhibit No. 21). The minute of proceedings at the general meeting of 11th March 1912 (Exhibit No. 22) shows that the President proposed to plaintiff that he should tender his resignation to the Municipality and receive pay up to 2nd March 1912, and that if he did not accept this within a week, he would be left to his remedy by suit and the Municipality would be free to appoint another Secretary. The Municipality resolved that this was sanctioned and applications should be invited by advertisement for the appointment of Secretary. There was some subsequent correspondence between the plaintiff and the President and Vice-President, which led to nothing and on the 13th April 1912 he gave notice to the Municipality that he would file a suit. The suit was not, however, actually instituted till 10th October 1912.

In the plaint plaintiff says that on 11th September 1911 he was made to relinquish charge of his post of Secretary and finally on 11th April 1912 after a deal of correspondence, he was told that his services were dispensed with, without any charge being framed or his defence or explanation being

taken. He asserted that the Municipality had no legal authority to dispense with his services and that he was entitled to recover his pay (Rs. 35 per mensem) from 12th September 1911 to 11th April 1912 and that after that to date of suit, he was entitled to damages at the same rate. He also claimed a further sum of Rs. 500 as damages for loss of reputation owing to defendant's illegal action. It may be at once said that this last claim was disallowed by the lower court, and that plaintiff's pleader does not press the cross objection he has filed regarding it.

The defendant Municipality pleaded that the suit was barred by limitation and want of proper notice under section 167 of the Municipal Act, that plaintiff was not appointed permanently in such a way that his services could not be dispensed with, that the Municipality were justified in dismissing him, and that he had suffered no damages and was not entitled to recover any.

Among the issues raised were the following :—

3. Whether defendant was justified in dispensing with plaintiff's services on the grounds alleged in paragraph 3 of the written statement ?

4. When were plaintiff's services dispensed with ?

The Sub-Judge on the merits of the case held that the defendant was not justified in dispensing with plaintiff's services. The grounds put forward in paragraph 3 of the written statement are, he holds, insufficient. The first of these was that plaintiff's services to the Municipality were not satisfactory. The Sub-Judge held this not proved, and appellant's pleader does not contest this in this court. The second was that the defendant had to abolish the post of Secretary as an experimental measure. This the Sub-Judge holds cannot be relied on, as the action of the Municipality was illegal without the sanction of the Commissioner in Sind. The third was that plaintiff's services elsewhere had been bad and he had concealed the fact that he had been dismissed from other ser-

tees. This was rightly rejected by the Sub-Judge as giving no justification on the general rule stated in Halsbury's Laws of England, Volume XX, page 98, paragraph 189. The Sub-Judge also held that plaintiff's services were dispensed with on the 11th March 1912, when the Municipality passed the resolution, Exhibit No. 22, and that as plaintiff was entitled to the additional period of one month's notice under section 15 (2) of the Limitation Act, the suit was not time barred under section 167 of the Municipal Act. He awarded him damages at Rs. 35 per month from 11th September 1911 to 10th October 1912, the date of suit, in all, Rs. 455.

I have given the facts and pleadings at some length, because it is, I think, important to bear in mind the difference between (1) the power summarily to dismiss a servant without notice on some ground such as misconduct, which may justify this and (2) the power to terminate a contract of service by reasonable notice. Though the defendant Municipality has in its pleadings attempted to justify the removal of plaintiff from his post under the former power, yet the latter is also pleaded by the defendant in the written statement, which contended that plaintiff was not appointed permanently in such a way that his services could not be dispensed with. The 3rd and 4th issues also use the phrase "dispensed with" and not "dismissed." And as a matter of fact, it is clear that the plaintiff was not dismissed by the Municipality for any reason falling under a master's power of summary dismissal for misconduct, etc., but that his services were dispensed with on the ground that the Municipality did not want to employ a Secretary any longer (Exhibits Nos. 18 and 29). Plaintiff himself admits this in the application referred to in Exhibit No. 22, and the Resolution No. 21 also speaks of plaintiff's removal from his post, and not his dismissal. The Sub-Judge has rejected the Municipality's plea as to dispensing with plaintiff's services, because the abolition of the post of Secretary, on which that dispensing with his services was based, was illegal under the Municipal Act. He says: "Now,

if, in the general interests, the Municipality thought it advisable to abolish the post of Secretary and to dispense with plaintiff's services, their course was obvious. They could have obtained the Commissioner's sanction for the abolition of the post and then said that they wished to dispense with plaintiff's services and then could have given him a month's notice or a month's pay, plaintiff being a monthly servant. A master is, of course, justified at all times in reducing his establishment and the plaintiff would have had no cause for complaint. Instead of this, however they dismissed him illegally on plainly inadequate grounds." But, in my opinion, this confuses the real point. The word "dismissed" in such a case is generally used with reference to a master's power of summary dismissal for misconduct, etc., and as I have already shown, plaintiff was not dismissed in this sense. The case really falls under the other power of master to terminate the contract of hiring and service, and should be so treated. There was a 'permanent' post of Secretary, but Mr. Hassaram was quite right in his contention that a man appointed to that post has no right to occupy it permanently unless he is dismissed for some reason justifying summary dismissal. The contract is one terminable on either side by reasonable notice, and just as plaintiff could have left the post, if he had wanted to, after reasonable notice, so also the Municipality could dispense with plaintiff's services, after such notice. The circumstances are not such that plaintiff could be considered to be merely on a yearly hiring, as is the general presumption (See Halsbury's "Laws of England," Volume XX, page 92, paragraph 173), and the case falls under the rule stated in paragraph 187 at page 97 of that same work, viz., "If no custom nor stipulation as to notice exists, and if the contract of service is not one which can be regarded as a yearly hiring, the service is terminable by reasonable notice." Addison's Law of Contracts, 10th Edn., page 864, similarly states: "an indefinite hiring is determinable by a reasonable notice in the absence of any agreement or custom to the contrary." There is nothing that I can find in the Bombay District Municipal Act to the

contrary. Clause (e) of section 46 clearly refers to "dismissal" in the nature of a punishment for misconduct, etc., and the Municipal rule 102 can only refer to such a dismissal, for it speaks of the officer dismissed being heard in his defence and of the charge or charges brought against him. The general power of a master to get rid of a servant after reasonable notice remains entirely untouched by anything in that rule or section 46. Rule 108 that "pensions shall not be granted by the Municipality" also goes against any contract by the Municipality to allow the plaintiff to remain in service (if he wanted to) until any particular time.

It is clear, therefore, that what really gives the plaintiff a right to damages is not the fact that the Municipality's abolition of the Secretary's post was illegal, but that they did not give him reasonable notice. This does not of course make their removal of him legal, but it affects the question of damages. What is "reasonable notice" is a question which varies with the circumstances of the case. The Sub-Judge in the extract from his judgment given above puts it at a month, but I should be inclined to put it at three months, having regard to the standard generally adopted in England for "clerks in superior positions" (See note (p) at page 97 of Halsbury's Laws of England, Volume XX). The ordinary measure of damages in such a case is the amount of wages which the servant has been prevented from earning by reason of his wrongful dismissal, after taking into consideration the probabilities of his obtaining employment elsewhere, and in this connection it is laid down that it is the servant's duty to use due diligence in endeavouring to obtain employment (Halsbury, Vol. XX, pp. 112, 113). In this case the Municipality to a certain extent kept the plaintiff in doubt as to whether he might not be re-employed by them, and it was not till 11th March 1912 that it was definitely decided that he would not be employed again as Secretary. He was also offered his pay up to 2nd March 1912. In the circumstances, I think, he is entitled to more than three months' wages as damages, viz.,

to the wages for the period of six months from 11th September 1911 to 10th March 1912, intervening before he was definitely told he would not be employed. He is not, in my opinion, entitled to anything more, even if it be true that he seriously sought employment but failed to get any. The evidence on this point of plaintiff and his witnesses is not, however, of a reliable nature. The fact that plaintiff unnecessarily delayed bringing his suit till 10th October 1912 does not of course entitle him to damages up to that date.

As regards the plea that the suit is barred by section 167 of the Municipal Act, I hold that that section does not apply, as this is an action brought on a contract, following the rulings in *Ranchordas Moorarji vs. Municipal Commissioner for the City of Bombay*¹ and *M. J. J. of Faizpur vs. Nanuk Dulat Shet*.² I do not agree with the Sub-Judge that plaintiff's dismissal or removal can be said to be something done, or purporting to have been done, in pursuance of the Municipal Act. It was not an act done under any power conferred on the Municipality by the Municipal Act, but under the general rule relating to contracts of service to which I have referred above.

It is unnecessary, therefore, to decide the point of limitation arising under this section 167. Nor does article 2 of the Limitation Act apply to the case. In my opinion it falls under article 115.

I agree with the Sub-Judge that if section 167 does apply, the notice given was sufficient, and I am inclined to agree with him that plaintiff is entitled to the benefit of section 15 (2) of the Limitation Act, a point on which there is some variance of judicial opinion. I also think that, in the circumstances of this case, the Sub-Judge is justified in taking the 11th March 1912 as the date of the "act complained of" within the meaning of section 167. But, as I hold that that section does not apply, these questions do not arise.

(1) I. L. R. 25 Bom. 387, at p. 393—3 Bom. Law Rep. 158.

(2) (1897) P. J. 140.

For the reasons given I modify the Lower Court's decree by awarding plaintiff damages at the rate of Rs. 35 per month for six months from 11th September 1911, *i.e.*, for Rs. 210 instead of Rs. 155.

As each party has succeeded and failed to the extent of about half the amount in dispute in appeal, I order each party to bear half his opponent's costs of appeal, except that respondent must bear the whole of the costs of his cross-objections.

Decree modified.

[Allahabad High Court.]

PRESENT: MR. JUSTICE TUDBALL.

AMOLAK RAM AND ANOTHER *vs.* KING EMPEROR.

N.W.P. Act I of 1900 Ss. 7, 132, 147, 148—Erection of a wall without the sanction of Municipal Board—Notice to demolish not complied with—Conviction under S. 148 and at the same time to pay a daily fine of Rs. 5 till demolition—Illegal.

Where a person erects a wall without the sanction of the Board and the Board issued notice to stop the building till he obtains sanction, which was not complied with another notice was issued to stop the building and to demolish the portion erected. This was also disobeyed. He was then convicted under S. 148 of the Municipal Act and sentenced to pay a fine of Rs. 20 and also to pay a daily fine of Rs. 5 till it is demolished.

Held that he committed two offences, one under S. 132 read with S. 7 of the Act for erecting without sanction and under S. 147 for disobeying the lawful direction of the Board; and the imposing of daily fine is *ultra vires*, as it can be done only if the accused still persisted after the first conviction.

Criminal Revision Petition against an order of the District Magistrate of Budaun.

Babu Satya Chandra Mukherji, for the appellants.

Mr. R. Malcolmson (Assistant Government Advocate) for the Crown.

TUDBALL, J.—The appellants Amolak Ram and Ram Sarap have been convicted under the Municipalities Act in the following circumstances. Under Section 132 of the Municipalities Act, the Municipal Board of Budaun has made it a rule that any person wishing to erect or re-erect any building, shall apply to the Municipal Board in writing and obtain their

sanction before he can build. For a breach of such rule, a fine of Rs. 50 may be imposed, and when the breach is a continuing breach, with a further fine which may extend to five rupees for every day after the date of the first conviction during which the offender is proved to have persisted in the offence. Clause 2 of Section 132 gives a Magistrate the power in such a case to make an order requiring the offender to remedy the mischief so far as lies within his power. The Courts below have held that the two applicants started to re-erect a building without the sanction of the Board, that the Board issued a notice to stop the building until they had obtained the necessary sanction, that the applicants refused to apply in that respect, whereupon the Board issued another notice calling upon them, not only to stop the building, but to demolish that portion which they had erected without permission. This notice also received no attention from the applicants. Thereupon action was taken under Section 148 and the notice mentioned under that section was also served upon them but they declined to obey. On these findings the Magistrate fined each of them the sum of Rs. 20 holding that they were guilty under Sections 87 and 147 of the Municipal Act. The Magistrate further ordered the accused to demolish the wall within a week and directed that if they failed to do so, they would have to pay a further fine of Rs. 5 per day. The conviction was upheld by the District Magistrate. The applicants come here in revision. The first plea is that what the applicants did does not come within the meaning of the words "erect or re-erect any building." It is clear from the judgment of the Magistrate that the applicants were building a wall which was to form part of a house and it was quite clear that the building of such a wall is the erection of a building. There is no force whatsoever in this plea. It is next pleaded that the order for a daily fine passed by the Magistrate is illegal, as such a fine can only be imposed when it is proved to a Court that the accused has persisted in his offence after the date of his first conviction. It seems to me clear that the applicants were guilty of two offences one under Section 132 read with Section 87 of the Municipalities Act,

and secondly, of an offence under Section 147 of the Municipalities Act, for disobeying any lawful direction given by the Board. However that is but a small matter. The direction of the Magistrate that the wall should be demolished is clearly one passed under Section 132, Clause 2 and was within the Magistrate's jurisdiction, but that portion of the order wherein the Magistrate directs a further daily fine of Rs. 5 shall be imposed until the whole construction is demolished is clearly *ultra vires*. This class of fine can only be imposed if after the first conviction it is satisfactorily proved to the Court that the accused has persisted in the offence in spite of direction of the Court. The application is therefore allowed only to this extent, that I set aside so much of the Magistrate's order as imposed a daily fine till the demolition of the whole construction. If the applicants persist in their offence, it will be open to the Municipal Board to apply to the Magistrate and to prove to his satisfaction that the accused have persisted in their offence, and the Magistrate will then have power to impose a daily fine as he shall deem fit. Excepting for this modification the application is rejected.

The stay order passed by this Court on the 20th of May, in regard to the demolition is set aside. *Order set aside.*

King's Bench Division.

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Incorporated Council of Law Reporting.]

THOMPSON vs. BRADFORD CORPORATION AND TINSLEY.

Local Government—Widening of Street—Highway Authority—Post Office—Removal of Telegraph Pole—Hole caused by removal improperly filled in—Liability of Highway Authority and Post Office—Telegraph Act, 1863 (26 & 27 Vict. c. 112), S. 15—Telegraph Act, 1868 (31 & 32 Vict. c. 110), S. 2—Bradford Corporation Act, 1910 (10 Edw. 7 & I Geo. 5, c. cxxvii), S. 25.

A highway which was vested in the Bradford Corporation and over which very heavy traffic passed was at a certain point very narrow. The Corporation under powers conferred upon them by a Local Act determined to widen the highway by setting back the kerbstone and throwing the causeway into the road. On the edge of the causeway nearest the road there was a telegraph pole which it was necessary to remove, and the Corporation wrote to the Post Office authorities asking them to set back the pole to the improved street line.

1915
April 30.

The Post Office accordingly had the pole removed and the hole filled in. Shortly afterwards the Corporation threw the road open for traffic. A few days later a steam wagon belonging to the plaintiff was passing along the highway when one of its wheels sank into the hole and the wagon was considerably damaged. In an action brought by the plaintiff against the Corporation and the Post Office authorities to recover damages for injury to his wagon caused by the negligence of the defendants:--

Held that the defendants were liable, the Corporation upon the ground that they were altering the character of part of an old road (*i.e.*, in effect making a new road), and their duty was to so make it that when they threw it open for public use it should be reasonably safe for the purposes for which it was intended to be used; the Post Office authorities upon the ground that having done, perhaps voluntarily, a piece of work, they did it negligently.

McClelland vs. Manchester Corporation, (1912) 1 K. B. 118 and *Hill vs. Tottenham Urban Council*, (1898) 15 Times L. R. 53, followed.

Steel vs. Dartford Local Board, (1891) 60 L. J. (Q. B.) 256 distinguished.

Held, further, that the Telegraph Act, 1863, did not take away any responsibility which the Corporation might be under independently of it

Appeal by the defendants from the judgment of the judge of the Bradford County Court.

The action was brought to recover damages sustained by the plaintiff by reason of the negligence of the defendants in connection with the widening and alteration of a road situate in the City of Bradford and known as Horton Bank and the removal of a telegraph pole in the road, in consequence whereof, a steam wagon belonging to the plaintiff while being properly driven by one of his servants along the road on April 10, 1914, fell into an excavation in the road and was seriously damaged.

The particulars of negligence relied upon by the plaintiff were that the defendants having dug a large hole or trench in the road failed and neglected to so fill it up and repair the road as to make it safe and sufficient for the proper and accustomed user thereof by vehicular traffic or to give proper or any warning to the public (including the driver of the plaintiff's wagon), that the road was unsafe or unfit for the passage thereon of the traffic, and the defendants failed to properly supervise or carry out the alterations and repairs in and upon the road.

The facts were as follows:—Horton Bank is one of the main thoroughfares between Bradford and Halifax over which very heavy traffic passes and is vested in the defendant corporation. At the point where the accident happened, it was very narrow, and the corporation, under powers conferred upon them by S. 25 of the Bradford Corporation Act, 1910¹, determined to widen it by setting back the kerbstone and throwing the causeway into the road. On the edge of the causeway nearest the road there was a telegraph pole which it was necessary to remove and the corporation wrote to the defendant Mr. Tinsley on March 5, 1914, saying that the works in connection with the improvement were being carried out under powers conferred upon the Bradford Corporation by the Act of 1910 and asking him to set back the pole to the improved street line. Mr. Tinsley was one of the principal officers in the Post Office Engineering Department and it was admitted that he was the proper person to be sued if the plaintiff had a cause of action. Mr. Tinsley had the pole removed on April 3 and then had the hole filled in. On April 6 the road was opened for traffic by the corporation, and on April 10, about 2-15 p. m., the wheel of the plaintiff's wagon sank into the hole and the wagon was considerably damaged. The wagon was driven by steam and was of a type in common use in Bradford and the neighbourhood. It weighed 4 tons and 19 cwts., and was loaded with stones weighing 4 tons. No warning was given that the road was unsafe, and in the view of the County Court Judge it was not known to be unsafe. Mr. Tinsley's men having dug the pole out of the hole proceeded to fill it in, finishing the job about 5-30 p. m. on April 3. When they had finished, they put back the barriers and lamps which the corporation had put round the pole, and from that time onwards Mr. Tinsley

¹ Bradford Corporation Act, 1910 (10 Edw. 7 & 1 Geo. 5, c. cxyii.) S. 25: "Subject to the provisions of this Act, the corporation upon the lands in that behalf delineated on the deposited plans and described in the deposited book of reference and in the line and situation and according to the levels shown on the deposited plans and sections may make and maintain wholly in the city the following street works (that is to say) Work No. 13. A widening and improvement of High Street Great Horton on the northern side thereof between Holly Bank Road and a point about fifty-four yards westward of that road."

had nothing further to do with the hole, and the corporation did nothing further to it. Workmen employed by the Post Office on the job gave evidence to the effect that the hole was filled in as they had done on previous occasions in other places, and was well rammed. The hind wheel of the wagon was agreed to be about 39 inches diameter with a tread 10 inches broad, yet with this large bearing surface the wheel sank practically instantaneously down nearly to the axle and the County Court Judge arrived at the conclusion that whatever the usual practice may have been in filling up holes, the hole on this occasion had not been filled and rammed in such a way as to carry vehicles like the plaintiff's wagon in safety. On April 6, 1914 when the corporation took down the barriers and permitted the traffic to pass along the road, the surface of the road appeared to be in good order, and there was nothing in the appearance of the road to indicate that the hole had not been properly filled in.

The County Court Judge gave judgment against both defendants, against the defendant Tinsley as the representative of the Post Office upon the ground that as the Post Office authorities had opened a hole in the ground which they knew was going to form part of a main road and had filled it in a way which was not sufficient to carry the usual traffic there was negligence on their part; and against the Corporation upon the ground that it was their duty as the highway authority to see for themselves that the hole was or had been filled in so as to make it safe for the normal traffic, and they had neglected that duty.

The defendants appealed.

Macmorran, K. C., and *T. D. Wright*, for the defendants, the Bradford Corporation. The Corporation required the Post Office to remove the pole under S. 15 of the Telegraph Act, 1863, as amended by S. 2 of the Telegraph Act 1868, by which the Act of 1863 is made applicable to the Postmaster-General. The Corporation did not take the matter out of the hands of the Post Office as they might

have done under S. 19 of the Act of 1863; and the Post Office did all the work. By S. 18 of the Act of 1863 it is the duty of the Post Office to restore the road, and by S. 42 the Post Office is responsible for all accidents and injuries happening through its default and is to save harmless all bodies having control of the streets in respect of such accidents and injuries. *Cressy v. South Metropolitan Gas Co.*¹ and *Brame v. Commercial Gas Co.*² bear upon the present case to some extent as they illustrate the respective liabilities of gas companies and local authorities. There was no obligation upon the Bradford Corporation to supervise the work. If it were merely a question of failing to keep the road in repair, it is clear that the corporation would not be liable. But the question is whose duty was to fill in the hole? Section 18 of the Telegraph Act, 1863, places the duty wholly upon the Post Office. As the corporation did not take over the work under S. 19, they have no responsibility in the matter. If the corporation had under S. 19 taken the work out of the hands of the Post Office, they would undoubtedly have been liable for negligence. If a corporation are both a sewer and a highway authority, they may be liable as the sewer authority though not as the highway authority: *Papworth v. Battersea Corporation*.³ *Steel v. Dartford Local Board*⁴ shows that the Corporation of Bradford is not liable. The Act of 1863 places no obligation upon the corporation to do anything except to give the notice to the post office. The decision in *Shoreditch Corporation v. Bull*⁵ is not in point. In that case the local authority had interfered with the road and had negligently omitted to restore it. But the Corporation of Bradford have done nothing. *McClelland v. Manchester Corporation*⁶ is distinguishable upon the same ground. There is no finding by the County Court Judge that the Corporation accepted the duty of superintendence and performed it negligently, and there was no duty in law upon the Corporation to exercise supervision over the work.

¹ (1906) 94 L. T. 790. ² (1914) 3 K. B. 1181.

³ (1914) 2 K. B. 89; 1915, 1 K. B. 392. ⁴ 60 L. J. (Q.B.) 256.

⁵ (1904) 90 L. T. 210. ⁶ (1912) 1 K. B. 118.

H. L. Murphy, for the defendant *Tinsley*. There was no duty upon the Post Office authorities to make that part of the road from which they removed their pole suitable for heavy traffic. By S. 29 of the Bradford Corporation Act, 1910, ss. 40 and 41 of the Bradford Corporation Act, 1902 (2 Edw. 7, c. cxiii.), "shall extend and apply to and in relation to the tramways and street works by this Act authorised as if those enactments were in this Act re-enacted with special reference thereto," and S. 41 of the Act of 1902 provides that "the Corporation shall not raise, sink or otherwise alter the position of any pipe, tube, wire cable conductor or other apparatus belonging to or used by His Majesty's Postmaster-General except in accordance with and subject to the provisions of the Telegraph Act, 1878." Section 7 of the Telegraph Act, 1878, applies to the present case. It provides that where any work proposed to be done in the execution of an undertaking authorized by statute involves an alteration in any telegraphic line of the Postmaster-General, the undertakers shall give not less than seven nor more than fourteen days' previous notice to the Postmaster-General, who may, before the expiration of seven days after the notice is given to him, give a counter-notice to the undertakers requiring them to make the alterations under his supervision. That section shows that the section in the Telegraph Act, 1863, which have been referred to on behalf of the Corporation do not apply to the present case. They only apply where the work is undertaken and initiated by the Post Office for its own purposes. The Post Office only undertook to set back the pole and reset the earth, not to make a portion of a road. The fact that they replaced the lamps where the hole had been made clearly indicated that the Post Office authorities did not purport to have made the hole safe.

Waugh, K. C., and *R. Watson*, for the plaintiff. *Steel v. Dartford Local Board*¹ is distinguishable. In that case the Court was dealing with an old highway. In the present case

¹ 60 L. J. (Q.B.) 256.

a new highway was thrown open and there was a duty upon the Bradford Corporation to see that it was not a trap. The effect of s. 149 of the Public Health Act, 1875 (38 and 39 Vict. c. 55), is that the highway is vested in the defendants the Corporation of Bradford, and is therefore a duty upon them to see that it is reasonably fit for traffic. *Hill v. Tottenham Urban Council*¹ is directly in point. The Corporation was guilty of misfeasance: *Shoreditch Corporation v. Bull*²; *McClelland v. Manchester Corporation*.³ The road was apparently sound, but in fact it was not. There was evidence upon which the County Court Judge could find negligence on the part of the Corporation.

Macmorran, K. C., in reply. The Telegraph Act, 1863, is preserved by the Telegraph Act, 1878, and the Act of 1863 casts a statutory obligation upon the Post Office authorities to put the road into a proper state of repair. Section 42 of the Act of 1863 makes the Post Office liable for all accidents, and there was no obligation upon the Corporation to guarantee that the Post Office would do the work properly, and upon that ground *Hill v. Tottenham Urban Council*⁴ is distinguishable. The present case is governed by *Steel v. Dartford Local Board*⁵.

BAILLIACHE, J.:—In this case there are two appeals in an action brought by the plaintiff Thompson against the defendants the Corporation of Bradford and William Tinsley. Mr. Tinsley represented the Postmaster-General. The action of the plaintiff is, in substance against the Corporation of Bradford as road authority, and against the Postmaster-General as having done certain work in removing telegraph poles. The action was for negligence, in that when the plaintiff's steam wagon was being driven along a road which had lately been opened by the Corporation of Bradford to the public, the wheel of his wagon sank into a hole in the road, and the wagon sustained damage. The County Court Judge

¹ 15 Times L. R. 53.

² (1912) 1 K. B. 118.

³ 90 L. T. 210.

⁴ 15 Times L. R. 53.

⁵ 60 L. J. (Q.B.) 256.

gave judgment against both defendants for the damage done and both defendants now appeal on the ground that there was no evidence of negligence in regard to either of them upon which the judgment of the County Court Judge can be sustained.

The very short facts of the case are not at all in dispute. (Having stated them the learned Judge continued :)

Now, the first question is whether the Bradford Corporation are liable for that accident. Mr. Macmorran on their behalf has reminded us that for mere non-feasance the road authority are not responsible and has cited one or two authorities to that effect. We do not desire to say a word against that principle, which is far too well established to be shaken even if we desired to shake it now. He has further called our attention to the Telegraph Act, 1863, and in particular to ss. 15 to 19 of that Act, and to s. 42. Under s. 15 of that Act the duty is cast upon the company. In those days the telegraphs in the country and the telegraph communications were in the hands of companies, but a few years afterwards they became vested in the Postmaster-General. We may conveniently treat the Act of 1863 as though the telegraphs were at that time vested in the Postmaster-General, and say that the duty is on the Post Office authorities by s. 15 of the Act to remove poles of this description when requested to do so by the local authority. Section 17 of the Act gave the local authority power to supervise the work if they pleased ; and s. 18 provided that Postmaster-General if he did the work was to restore the street and keep it in repair—that is the part that has been put out of repair by the work done by him—for a period of six months. By s. 19 the local authority were empowered to do the work themselves if they chose ; and by s. 42 the Postmaster-General was to be liable for accidents which were caused if he did the work which the local authority requested him to do and an accident resulted from the fact that the work was done by him in a negligent way, and Mr. Macmorran has upon those sections based his argument that whereas in the present case the Postmaster-General did

the work at the request of the local authority, the Act of 1863 imposes upon him, and upon him alone, the duty of doing the work carefully, and throws upon him, and upon him alone, the responsibility for any injury and expense that may result from the work being improperly done. I do not think that that is the result of the statute. It is quite clear that the statute does impose those liabilities on the Postmaster-General, but I do not think that it imposes them upon him to the exclusion of any liability any other authority may be under for other reasons in respect of the work which has been done. In truth I do not think that the Act of 1863 has very much to do with this case at all. I think that this case, so far as the Postmaster-General goes, may be treated as the case of a person having done work by request, which possibly he need not have done, but having done it and done it negligently, he is liable, even if it was work he need not have undertaken. But to go back to the Corporation of Bradford, I do not think that the Act of 1863, even if that be the Act under which this work was done,—and there is some doubt whether the work was done under that Act or under the Telegraph Act, 1878,—but be that as it may, I do not think that the Act of 1863 disposes of or takes away any responsibility which the Corporation might have come under independently of it. Bearing in mind their non-liability for non-feasance, did the Corporation of Bradford come under any liability in respect of this pole? I think they did for the reason that they were making a new road. I quite agree that the pavement and the roadway together form one highway, but when I speak of a new road I mean that the Corporation were turning what had been a footpath into a roadway, and in my judgment that is equivalent to making a new road. They were altering the character of part of an old road, and that is in effect making a new road.

What is the duty of a highway authority which makes a new road? The duty is to make it so that when the authority throws the road open to the public for public use, the road shall be reasonably safe for the purposes for which it is intended to be used. In this particular case very heavy traffic

passes over this road, and in my judgment it was the duty of the highway authority who were making this road and who were intending to throw it open for the traffic to see that it was reasonably fit for that purpose. It is true that this particular piece of road was unfit by reason of what had been done by the Post Office authorities, but that does not seem to me to matter, because I think it is no answer when a highway authority throws open a new road and that road is in fact unfit, to say: "Well, the unfitness arises because that part of the road which was unfit was not rendered unfit by anything we did, but was rendered unfit by reason of something which some one else did at our request." I do not think that is any answer at all, and in my judgment the Corporation are liable on the simple ground that in altering the character of the road—turning from a foot path into a roadway for heavy traffic—there was an obligation upon them to see that when they opened it to the public it was fit for the traffic and purposes for which it was intended to be used. I think that is in accordance with the judgment of Lush J. in *McClelland v. Manchester Corporation*¹ and with the judgment of Bruce J. in the well-known case of *Hill v. Tottenham Urban Council*², and I think that the fact that it was a new road—a road devoted to a new purpose as distinguished from an old highway—distinguishes this case from *Steel v. Dartford Local Board*.³ For these reasons I hold that the Corporation of Bradford were liable. The Post Office authorities seem to me to be liable on the very simple ground that having done, perhaps voluntarily, a piece of work which they may not perhaps have been compellable to do, they did it negligently. If a person does a piece of work negligently, although he need not have done it at all, he is liable for the consequences of his negligence. If he undertakes to do it he must do it with reasonable care, and the Post Office authorities appear to have neglected their duty in that respect, and on

¹ (1912) 1 K. B. 118.

² 15 Times L. R. 58.

³ 60 L. J. (Q. B.) 256.

the simple ground, apart from statute, it seems to me they are liable. I think the learned County Court Judge was quite right in giving judgment against both the Bradford Corporation and the Post Office authorities in the person of Mr. Tinsley, and this appeal must be dismissed.

SHEARMAN J.:—I agree, and have nothing to add.

Appeal dismissed.

Solicitor for plaintiff: T. B. Brook, for A. V. Hammond, Bradford.

Solicitor for defendant Tinsley: Solicitor to Post Office.

Solicitor for defendants the Bradford Corporation: Cann & Sons, for F. Stevens, Town Clerk, Bradford.

Madras High Court.

PRESENT :

MR. JUSTICE AYLING.

MAHOMED IBRAHIM SAHIB vs. MUNICIPALITY OF ANAKAPALLI.

Madras District Municipalities Act, sections 92, 103, 269—Non-payment of toll-gate kist—Prosecution—M.C. 439, 11.7.15.

The amount of toll-gate kist due from the farmer of a toll-gate is not an amount due on account of any tax within the meaning of section 103 of the District Municipalities Act; nor does the amount fall under any of the headings dealt with in section 269 of the Act. The payment is due under a contract under section 92 of the District Municipalities Act and as such is not covered by the provisions of section 269 of the Act.

A prosecution for failure to pay the amounts due under the contract is therefore illegal.

Petition under sections 435 and 439 of the Code of Criminal Procedure, 1898, praying the High Court to revise the order of the Bench Court of Anakapalli dated 13th April, 1915 in summary trial No. 185 of 1915.

Mr. B. Narasimha Rao for Petitioner.

Public Prosecutor for Government.

AYLING, J. :—The petitioner was a toll-gate contractor under the Anakapalli Municipality. He has been prosecuted under section 103 and convicted under section 111 of the District Municipalities Act in consequence of his failure to pay what is called in the complaint “toll-gate kist” for the second half of 1914-15. This “toll-gate kist” is in fact the amount due to the Municipality from the petitioner, to whom the right of collection has been farmed out by the Municipal Council under section 92 of the District Municipalities Act.

The only question is whether it is an “amount due on account of any tax” within the meaning of section 103. On the face of it, it is certainly not so; but the learned Public-Prosecutor relies on section 269 which authorises the Municipal Council to collect certain sums due to them as if they were taxes. The suit amount does not however seem to fall under any of the headings dealt with in section 269. It cannot in my opinion be properly be described as rent. It is a payment due under a contract. But the section only refers to contracts made under sections 147, 209 and 218—not to contracts under section 92. In my opinion the petitioner was not liable to prosecution for failure to pay amounts due by him under the toll-gate contract. I set aside the conviction and sentence and direct the fine, if paid, to be refunded.

Conviction set aside.

Bombay High Court.

Appeal from an Order No. 19 of 1914.

June 24, 1915.

PRESENT :

SIR BASIL SCOTT, KT., CHIEF JUSTICE, AND

MR. JUSTICE SHAIL.

THE MUNICIPALITY OF RATNAGIRI.....Defdt.Appellant
vs.

VASUDEV BALAKRISHNA LOTLIKAR.....Plff.....Respondent.

*Bombay District Municipalities Act (III of 1901), ss. 16,
167—Duty and Power to dismiss officers and servants of Munici-*

putty—Dismissal of Secretary—Act done 'in pursuance of' the Act—Suit for damages for wrongful dismissal barred, if instituted more than six months after dismissal.

As section 161 of the Bombay District Municipalities Act and the statutory rules made thereunder impose the duty and confer the power upon a Municipality to dismiss its officers and servants in proper cases, a dismissal of its Secretary by a Municipality is an act done in pursuance of the Act within the meaning of section 167 and a suit claiming damages for such dismissal on the footing of its being a wrongful dismissal is barred if instituted more than six months after the date of dismissal.

Appeal from an order passed by the District Judge of Ratnagiri in Appeal No. 328 of 1913 reversing the decree passed by, and remanding the suit to, the Assistant Judge of Ratnagiri, in Civil Suit No. 74 of 1913.

Mr. D. A. Khare for the Appellant.

Mr. G. K. Parekh for the Respondent.

JUDGMENT.

This was a suit filed by the plaintiff, who was formerly the Municipal Secretary of the Ratnagiri Municipality, against that municipality, claiming damages for wrongful dismissal. The learned Assistant Judge held that the suit was barred by limitation under the provisions of section 167 of the District Municipalities Act. That section provides that :—

"No suit shall be commenced against any Municipality... for anything done, or purporting to have been done, in pursuance of this Act, without giving to such Municipality . . . one month's previous notice in writing of the intended suit and of the cause thereof, nor after six months from the date of the act complained of."

The suit was instituted more than six months after the dismissal of the plaintiff by the Municipality, and the question raised in the preliminary issue was whether the dismissal was something done or purporting to have been done, in pursuance of the Act. The learned Assistant Judge held that it was done in pursuance of the District Municipalities Act, and that, therefore, the suit was out of time.

On appeal to the District Judge that decision was reversed and the case was remanded for hearing on the merits. The learned District Judge said :

"I hold that section 167 of the District Municipalities Act does not cover this case. That section is applicable in cases relating to anything done, or purporting to have been done, in pursuance of the Act. The test to be applied is not the nature of the suit or the subject-matter, but whether the cause of action was or was not connected with the exercise of the statutory powers conferred upon the Municipality. The employment and dismissal of servants are not acts done in pursuance of the Act within the meaning of this section."

We are unable to agree with that decision. Section 46 of the District Municipalities Act (Bom. Act III of 1901) provides that "Every Municipality shall, as soon as conveniently may be after the constitution thereof, make and may from time to time alter or rescind rules, but not so as to render them inconsistent with this Act, . . . determining the staff of officers and servants to be employed by the Municipality and the respective designations, duties. . . . etc., of such officers and servants, . . subject to the provisions of section 184, determining the mode and conditions of appointing, punishing or dismissing any such officer or servant."

Section 2 of the Act provides that all Municipalities constituted and rules made under the repealed District Municipalities Acts of 1873 and 1884 shall, so far as may be, be deemed to have been constituted and made under this Act. Therefore, the rules which were in force at the time of the dismissal, which were rules made under the Act of 1884, must be deemed to have been made in pursuance of the duty cast upon the Municipality under section 46 of the District Municipalities Act of 1901.

Now rule 98 of the rules of 1884 provides that "the Municipality alone shall have power to appoint, reduce or dismiss the Municipal Secretary," and certain earlier rules, namely, 77

and following rules, prescribe that the Secretary shall be one of the staff of officers to be employed by the Municipality, and define his duties. The Municipality, therefore, have the power and the duty in a proper case to dismiss the Municipal Secretary. That duty is imposed upon them, and that power is given to them by the Act or the statutory rules deemed to be made under the Act. That being so, when they exercised such power by purporting to dismiss this Secretary, that is, in our opinion, an act done or purporting to have been done in pursuance of the Act within the meaning of section 167. It does not appear to us that the decisions referred to in argument, namely, *Myres v. Bradford Corporation*¹ or *Lyles v. Southend-on-Sea Corporation*², give us any assistance in the decision of the particular question before us. We, therefore, set aside the order of remand, and restore the decree of dismissal passed by the Assistant Judge with costs throughout.

Order reversed.

Calcutta High Court.

Criminal Reference No. 2 of 1914, November 25, 1914.

PRESENT:

MR. JUSTICE FLETCHER AND MR. JUSTICE BEACHCROFT.
THE CORPORATION OF CALCUTTA Complainant.

Versus

PROMOTHO NATH MULLICK Opposite Party.

Calcutta Municipal Act (III of 1899 B. C.) ss. 589, 341, 102, 63 (3) Notice issued on behalf of General Committee, whether to be signed and if so, by whom—Special rule of evidence contained in s. 589, applicability of—Proceedings of Committee how to be proved when not signed by Chairman—Irregularity—Evidence Act (I of 1872), s. 78.

¹ (1915) 1 K. B. 417; 84 L. J. K. B. 306.

² (1905) 2 K. B. 1.; 74 L. J. K. B. 484; 92 L. T. 586; 69 J. P. 193;

3 L. G. R. 691; 21 T. L. R. 889.

There being no express provision in the Calcutta Municipal Act requiring that notices issued under the Act on behalf of the General Committee should be signed at all, section 589 of the Act does not stand in the way of the Secretary to the Corporation, who is also the Secretary to the Committee, signing such notices. But unless a notice purports to have been signed by the Chairman of the Corporation, the special rule of evidence contained in the section would not apply. That is to say, if a notice purports to have been signed by the Chairman, it would not have to be proved that a meeting was held or that it was regularly held. Where, however, the special rule contained in section 589 cannot apply, proceedings of the General Committee can be proved under the general law of evidence.

But printed proceedings themselves would not be sufficient legal proof unless they answer the description of a printed book purported to be published by the authority of the Committee as required by section 78 of the evidence Act.

The mere fact that the Secretary has signed a notice instead of the Chairman does not affect the merits, inasmuch as it is a defect or irregularity which is cured by section 102 of the Municipal Act.

Babus Mohendra Nath Ray and Buranasibassi Mukherji,
for the complainant.

Babus Manmotho Nath Mukherji and Satindara Nath Mukherji for the opposite party.

JUDGMENT.

FLETCHER, J.:—This case comes before us on a reference made by the Municipal Magistrate of Calcutta in his capacity as a Presidency Magistrate under section 432 of the Code of Criminal Procedure. Certain proceedings had been taken against Promotho Nath Mullick, the opposite party in this case, under section 450 (3) of the Calcutta Municipal Act, III (B. C.) of 1899, for his failure to comply with a notice served under the Act, the offence being under section 341 (1) for not having removed or altered a fixture within the period prescribed by the notice served under the Act.

The points which have been referred to us are as follows:—

- (1) Whether the section 589 of the Act stands in the way of the Secretary to the Corporation, who is also Secretary to the General Committee, signing a notice under section 341

of the Act. Section 589 is a special rule of evidence applying to all proceedings under the Act and when the notice is signed as mentioned in section 589, it proves the regularity of all proceedings taken under the Act. There is nothing in the section which limits the general law of evidence as applicable to proceedings under the Act. So far as the Secretary is concerned, there seems to be no reason why he should not sign the notice on behalf of the General Committee. The Secretary under the terms of the Act is not only the Secretary to the Corporation but he is also by the terms of section 63 (3) appointed Secretary to the General Committee. It could never be in the contemplation of the Legislature that every notice going under the Act should be signed by all the members of the General Committee and that any notice which did not contain the signatures of the members of the General Committee should be invalid. As a matter of fact, there is no express provision in the Act requiring signatures to these notices at all, and it seems not unreasonable that the Municipal Officer who holds the office of the Secretary to the Corporation and the General Committee should sign, as part of his ordinary duty, the notices that are issued on behalf of the General Committee, the only difference being that the special rule of evidence contained in section 589 does not apply when the notice does not purport to have been signed by the Chairman. But subject to that, of course, there is no reason why the notices should not be signed by the Secretary. In my opinion, we ought to answer the first question by stating that section 589 does not stand in the way of the Secretary signing a notice under section 341 of the Act.

The second question is—whether Exhibit I which is a copy of the printed proceedings of the General Committee's meeting and which contains their sanction under section 341 in this case—is sufficient legal proof of the sanction. That, again, depends on section 589. If the notice had been signed by the Chairman, it would not have to be proved that there had been a meeting or that had been regularly held. But that

does not prevent the general law of evidence from being applicable and those proceedings can be proved either by the production of a copy of proceedings certified by the legal keeper or by a printed book purported to be published under the authority of the General Committee.

In what manner the Corporation should think fit to prove the meeting and the passing of the resolution is not for us to determine at present. The copy, if produced, must be certified by the legal keeper. Presumably, Mr. Wyness is not the legal keeper. But apparently, the keeper of the proceedings of the General Committee would be the Secretary who is appointed by the Act to be the Secretary to the General Committee. I think, therefore, that the printed proceedings themselves would not be sufficient legal proof, unless they answer the description given in section 78 of the Evidence Act, namely, being a printed book purported to be published by the authority of such body.

The third question is—whether the order of the Chairman delegating to the Secretary to the Corporation of Calcutta and the Secretary to the General Committee of the Corporation of Calcutta, the powers to sign all written documents referred to and described in section 589 of the Act is legal. That question does not arise. But I may mention in passing, in order that the Corporation may have the benefit of the special rule of evidence under section 589 and to avoid further difficulties, that the notices issued should bear the signature or a facsimile of the signature of the Chairman, because whether the signature by the Secretary, the Secretary purporting to sign under the general power of delegation, would make applicable the special rule of evidence laid down by section 589, I am not at present prepared to say. All we need say is that this third question does not arise in this reference.

The next question is—whether in the event of Exhibit I and notice under section 341 being held illegal, these irregularities are cured by section 102 of the Act. Section 102 is in

these terms: "No proceeding taken under this Act shall be questioned on the ground merely of any defect or irregularity not affecting the merits of the case." If these are the only defects or irregularities, nobody could say that the mere fact that the Secretary has signed the notice instead of the Chairman in any way affects the merits. The second subsection may be of importance, if the case proceeds, namely, as to the proof that the meeting of the General Committee was duly convened and the resolution was free from all defects or irregularities.

These are all the questions pleaded before us by the Municipal Magistrate and there seems to be very little substance in them and we answer the reference in the above way.

BEACHCROFT, J.—The answer to the first question propounded by the learned Magistrate is obviously in the negative. Section 589 merely provides a method of proof of consent, etc., of the Corporation, General Committee, Chairman or Municipal Officers where the consent of those bodies or individuals is required under the Act. It has nothing whatever to do with the signing of notices, though doubtless if a notice purports to set forth the consent referred to in the section, signature of the notice by the Chairman would be sufficient evidence of the consent of the Corporation, General Committee or Chairman. There is no provision in the Act for the signing of the notices, nor are the duties of the Secretary defined, and there seems to be no reason why the signing of notices, if they require signature at all, should not be included in the ordinary duties of the Secretary.

The second question is—whether the printed proceedings of the General Committee's meeting which, *inter alia*, contains their sanction under section 341, is sufficient legal proof of the sanction under section 589 of the Act. The answer to this is also obviously in the negative, for Mr. Wyness, who signed, is not the Chairman. It was suggested that section 78 (5) of the Evidence Act would make the copy of the proceedings sufficient proof. But the copy produced does not appear to

have been certified by the legal keeper, nor is it contained in a printed book purporting to be published by the authority of the Corporation.

I express no opinion on the third question which does not appear to arise properly on the facts stated.

The fourth question is—"whether in the event of the Hon'ble Judges holding that Exhibit I the printed proceeding of the General Committee purporting to be signed by Mr. Wyness is not legal proof of the sanction of the General Committee under the provisions of section 589 or that the notice under section 341 should have been signed by the Chairman, and not by the Secretary, is either of these irregularities cured by the provisions of section 102 of Act III (B. C.) of 1899?" In view of the answer previously given that the Secretary is competent to sign notices, this question in so far as signature by him is assumed to be an irregularity requires no answer, though the section doubtless would cure an irregularity of such a nature.

But I am at a loss to understand how the learned Magistrate treats the state of things contemplated in the first part of the question as an irregularity. I imagine the Magistrate must have been in some doubt as to whether Mr. Wyness could legally sign the proceedings. If he was the President of the next ensuing meeting, it was obviously his duty to sign the proceedings under section 97. But that is not the question put by the learned Magistrate. His question is in effect this: "assuming that a certain document is not legal proof of a certain fact, does section 102 (which is merely a validating section), make it proof of that fact," in other words, "does section 102 amend the law of evidence?" When the question is presented in this form, the answer is so obviously in the negative that discussion becomes unnecessary.

Reference answered.

Punjab Chief Court.

PRESENT :

MR. JUSTICE RATTIGAN.

HARJI MAL,

Plaintiff (Appellant)

versus

THE MUNICIPAL COMMITTEE, DELHI, Defendant (Respondent).

Punjab Municipal Act (X X of 1891), S. 195—Pulling down a building constructed contrary to the Building Regulations—Municipal Committee's power to pull down—Discretion to be exercised.

A court will not interfere with the order passed by a Municipal Committee directing the pulling down of a building contrary to the sanction accorded by it.

The Municipal Committee must exercise its discretion whether an offending building should be pulled down or not.

Second appeal from an order of the Additional Divisional Judge, Delhi, affirming that of the Subordinate Judge, second class, Delhi, dismissing the suit.

Mr. G. C. Narang for the Appellant.

Mr. Santanam for the Respondent.

JUDGMENT.

After hearing Mr. Gopal Chand Narang for the Appellant and Mr. Santanam for the Respondent in reply, I must accept the latter's contention that no appeal can be entertained in the present case. The Additional Judge in his order, dated the 11th November, 1913, points out that the action of the Municipal Committee is very unreasonable and that the building as erected by plaintiff is in point of fact more advantageous to the public than would be the building as sanctioned. He, however, has been compelled to dismiss the plaintiff's suit on the ground that it has been built in contravention of the sanction obtained by him. I agree with the learned Judge that the Courts have no power to interfere in a case of this kind.

The plaintiff knew quite well what he was authorised to build and in erecting the *chabutra*, as it now stands, he deliberately took the risk of the Committee taking action against him under section 195 of the Municipal Act, and if he has been put to any loss he has himself only to blame. I must accordingly dismiss the appeal but I leave the parties to bear their own costs in this Court.

I may, perhaps, venture before concluding to express the hope that some reasonable arrangement will be come to between the parties and that the Committee may see their way to establishing their rights without putting plaintiff to the very heavy loss which he would apparently suffer if compelled to pull down the building.

Appeal dismissed.



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Alteration—of a building, see *Building*.

Balconies—projecting over streets, granting of permission for,—see *Madras City Municipal Act*.

Bengal Municipal Act III of 1884, secs. 239, 240, and 273, sub-sec. 1.—*Building, meaning of*—Erection of a masonry wall without permission.

The erection of a masonry wall without permission is erecting a building and is an offence.

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Bombay City Municipal Act—(*Bombay Act III of 1888*), secs. 289, 293; *Indian Railways Act (IX of 1890)* sec. 7—*Land Acquisition Act (I of 1894)*, sec. 7—*Vesting of Public Streets*—*Right of Railway Co. to lay lines in such streets*—*Acquisition of the street under the Act*.

The effect of vesting of streets in the Corporation is only to vest in that body such property as is necessary for the control, protection and maintenance of the street as a highway for public use.

Mayor, &c., of Townridge Wells v. Baird, (1896) *A. C. 434*, followed.

Sec 7 of the Railways Act controls sec. 293 of the City of Bombay Municipal Act and the Ry. Co. is entitled to lay Ry. lines in or across a street without any permission from the Municipality.

A Railway Company is entitled to lay the railway across a street without resort to the Land Acquisition Act.

G. I. P. Ry. Co v. Municipal Corporation of the City of Bombay and another .. 1

Building—constructed contrary to the Building Registration, pulling down of—Municipality's power to pull down—Discretion to be exercised—*Punjab Municipality Act*, s. 195.

A court will not interfere with the order passed by a Municipal Committee directing the pulling down of a building erected contrary to the sanction accorded by it.

The Municipal Committee must exercise its discretion whether an offending building should be pulled down or not.

Harij Mal v. The Municipal Committee, Delhi 97

Building—making additions to, without sanction of Municipality—opening doors and windows, whether a material alteration—*Demolition order*—*Discretion of Municipality*.

The plaintiff applied for and obtained sanction to build a *sidan*; the plan submitted showed certain gaps or open spaces between the supports of the roof. The plaintiff subsequently made additions by filling up the gaps with frames of wood and glass some of which were doors and some windows. The Municipality having issued a notice on the plaintiff requiring him to demolish the additions, the plaintiff sued for an injunction restraining the Municipality from interfering with the additions:

Held on appeal that the opening of the windows and doors constituted a material alteration of the building and that the Municipality's action was justified, one of its objects being to vindicate its authority.

Madan Mohan Lal v. The Municipal Committee of Delhi.. .. . 99

Building—*a wall without the sanction of the Municipal Board—Notice to demolish*
with—conviction and payment of daily fine till demolition—

Where a person erects a wall without the sanction of the Board and the Board issued notice to stop the building till he obtains sanction, which was not complied with, another notice was issued to stop the building and to demolish the portion erected. This was also disobeyed. He was then convicted under sec. 114 of the N.-W. P. Municipal Act and sentenced to pay a fine of Rs. 20 and also to pay a daily fine of Rs. 5 till it is demolished :

Held that he committed two offences one under sec. 132 read with sec. 7 of the Act for erecting without sanction and under Sec. 147 for disobeying the lawful direction of the Board ; and the imposing of daily fine is *ultra vires* as it can be done only if the accused still persisted after the first conviction.

Amolaki Ram v. King-Emperor

Building—*Erection of a new masonry wall is erecting a—see Bengal Municipal Act.*

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Limitation—*for prosecution for not complying with Building Regulations, runs only from the date of the final order. See Madras City Municipal Act.*

in respect of suits by dismissed servants, see Master and Servant.

Madras City Municipal Act III of 1904—Secs. 248, 249 & 427—Order of President to demolish balcony—whether appeal lies to Standing Committee—Discretion of President—Interference by Court.

Under sec. 249 of the Madras City Municipal Act III of 1904, it is the President that has to decide whether in any particular case permission for the erection of a balcony overhanging a public street should be granted or not. If the President refuses to grant permission, there is no appeal against his order to the Standing Committee.

The President's discretion is final ; and Courts cannot interfere with his discretion.

Purushotham Sah v. The President of the Corporation of Madras

Madras City Municipal Act, Secs. 328, 403, cl. (19).—Powers of the corporation regarding the securing the purity of aerated waters.—Food does not include drink.

Sale of unwholesome aerated waters does not fall within the sale of unwholesome meat, fish or provisions which is prohibited by the Bye-laws framed under the Madras City Municipal Act. The Municipality must deal with it under the special powers given to it under sec. 328.

The Crown Prosecutor v. Ganapathi Aiyar

Madras City Municipal Act, Secs. 287, 452 :—Notice referring to the section but not specifying particulars, not indefinite—Limitation for prosecution runs only from the date of the final order.

A notice issued under sec. 287 without specifying any particulars but merely referring to the provisions of the section is not vague or indefinite and must be complied with.

The offence of not complying with the order of the President is complete only after the issue of the final order ; and the period of limitation prescribed by the Act within which a prosecution must be instituted begins to run only from the date of the final order.

Kandaswamy Chetty v. Corporation of Madras

Madras District Municipal Act (IV of 1881), S. 53; Sch. A, cl. (3):—*Money lender, who is a,—Public purposes, what are.*

Any person who casually or intermittently invests his surplus funds in mortgage or personal security cannot be considered to follow the calling of a money lender.

Municipal Council of Tirupathi v. Sree Mahant Pray at Doorjee 1

Madras District Municipal Act IV of 1881, Sec. 261.—*No notice necessary for a suit for damages for breach of contract. —Meaning of 'amends.'*

A suit for damages for breach of a contract entered into with a local authority can be instituted without any previous notice of suit. The word 'amends' occurring in the Act refers to tortious acts injuring a person or his property and does not mean compensation or damages.

Municipal Council of Kumbakonam v. Veeraperumal 9

Master and Servant—*Notice of suit by a servant for dismissal, see Notice. Termination of service, notice for, see Notice.*

Master and Servant, See Notice

Officers and servants of Municipality—powers to dismiss—Dismissal of Secretary—Act done in pursuance of the Act—Suit for damages for wrongful dismissal barred, if instituted more than six months after dismissal—Bombay District Municipalities Act III of 1901, Secs. 46, 167.

As S. 46 of the Bombay District Municipalities Act and statutory rules made thereunder impose the duty and confer the power upon a Municipality to dismiss its officers and servants in proper cases, a dismissal of its Secretary by a Municipality is an act done in pursuance of the Act within the meaning of S. 167 and a suit claiming damages for such dismissal on the footing of its being a wrongful dismissal is barred if instituted more than six months after the date of dismissal.

The Municipality of Ratnagiri v. Vasudev, 88

Meaning of words—'Amends'—*See Madras District Municipal Act.*

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Notice—*Issued on behalf of General Committee, whether to be signed and if so, by whom—Calcutta Municipal Act (III) of (1899), Secs. 589, 841, 102, 63 (3)—Special rule of evidence contained in Sec. 589, Proceedings of—Proceedings of Committee have to be proved when not signed by Chairman—Irregularity—Evidence Act (I of 1872), Sec. 78.*

There being no express provision in the Calcutta Municipal Act requiring that notices issued under the Act on behalf of the General Committee should be signed at all, S. 589 of the Act does not stand in the way of the Secretary to the Corporation who is also the Secretary to the Committee signing such notices. But unless a notice purports to have been signed by the Chairman of the Corporation, the special rule of evidence contained in the section would not apply. That is to say, if a notice purports to have been signed by the Chairman, it would not have to be proved that a meeting was held or that it was regularly held. Where, however, the special rule contained in Sec. 589 cannot apply, proceedings of the General Committee can be proved under the General Law of Evidence.

But printed proceedings themselves would not be sufficient legal proof unless they answer the requirements of a printed book purporting to be published by the authority of the Committee as required by Sec. 78 of the Evidence Act.

The mere fact that the Secretary has signed a notice instead of the Chairman does not affect the merits, inasmuch as it is a defect or irregularity which is cured by S. 102 of the Municipal Act.

The Corporation of Calcutta v. Promotho Nath 91

Notice—*Merely referring to the Section, not indefinite.—See Madras City Municipal Act.*

—of suit for damages for a breach of contract, not necessary—See Madras District Municipal Act.

Mere disobedience of, not conclusive evidence of offence—*Essential ingredients of offence—Bombay District Municipal Act III of 1901 Sec. 151.*

Prima facie in order to render a person liable to conviction and punishment under Sec. 151 of the Bombay District Municipal Act III of 1901, it must be proved that a notice has been given him under sub-section (1) and (2) that he uses the place in question or permits it to be used in such a manner as to be a nuisance to the neighbourhood or dangerous to life, health or property. All the essential ingredients of the offence must be proved and the mere fact that notice in due form was given regarding the user of the place on a particular date cannot be conclusively taken that there has been user of the place in such a manner as to be a nuisance after that date.

Lurindiram v. Karachi Municipality

—of suit, Master and servant—Contract of service Bombay District Municipal Act (III of 1901), Sec. 167, whether applicable to suit on Contract

If no custom nor stipulation as to notice exists and if the contract of service is not one which can be regarded as a yearly hiring, the service is terminable by reasonable notice.

Sec. 167 of the Bombay District Municipal Act, 1901, does not apply to an action brought on a contract.

Having regard to the standard generally adopted in England for "clerks in superior position," a Municipal Secretary in India is entitled to three months' notice.

Municipality of Tatta v. Asanmal

—of suit, by a dismissed servant, see master and servant.

Offence—Essential ingredients of, see Notice.

Proceedings—of Municipal bodies, how to be proved,—see Notice.

Projections—in streets, see Streets.

Public purposes,—what are—see Madras District Municipal Act.

Railways Act—Indian,—Powers of Railway Companies to lay lines across streets.—see Bombay City Municipal Act.

Signature—of notices, see Notice.

Streets.—Public—Metalled and unmetalled portion.

The unmetalled portion on each side of a public street is none the less a public street.

Municipal Board of Agra v. Sudarsan Das

Injury sustained —Negligence—Doctrine of *Res Ipse Loquitor*—Onus of of an independent Contractor—Liability of the Corporation—Measure of damages.

In a suit brought by the plaintiff for damages for injuries sustained by him by the breaking of a pulley used in a street for lifting heavy water-pipes owing to the negligence of the servants of the Contractor employed by a Municipal Corporation :

Held that when the injurious agency which caused the accident was an inanimate object under the entire control and management of the defendants and used on a highway not closed to traffic in executing work which is found dangerous and the accident is such as would not happen in the ordinary course of things if those who had the management used proper care, the onus lies on the defendants to show that all reasonable precautions were taken and proper care used.

Laying of Railway lines across, right of Railway Co. re, see Bombay City Municipal Act.

Putting up of balconies projecting over,—see Madras City Municipal Act.

Vesting of,—Effect of,—see Bombay City Municipal Act.

Held also that the mere fact that the City Municipal Act cast on the Corporation the duty of supplying pure drinking water would not take the case out of the ordinary rule above stated or the provisions of Sec. 103 of the Indian Evidence Act.

Held also that the Corporation cannot escape liability simply by getting the works done through a Contractor.

Held also that in estimating damages to be awarded in cases of accidents, damages will be awarded for physical suffering, for the deprivation of limb and the consequent discomfort that attends the person all through life and also for the lessening of his wage-earning capacity, though damages on the last head should not be awarded on the footing of giving the plaintiff a capitalised value of his income.

Govinda Gramany v. The Corporation of Madras 30

Streets—*Projection in*,—see balconies, —sunshade.

Widening of,—*Highway Authority*—*Post Office*—*Removal of Telegraph Pole*—*Hole caused by removal improperly filled in*—*Liability of Highway Authority and Post Office*—*Telegraph Act, 1863* (26 and 27 Vict. c. 112), S. 15—*Telegraph Act, 1868* (31 and 32 Vict. c. 110), S. 2—*Bradford Corporation Act, 1910* (10 Edw. 7 and 1 Geo. 5, c. xxvii) S. 25.

A highway which was vested in the Bradford Corporation and over which very heavy traffic passed was at a certain point very narrow. The Corporation under powers conferred upon them by a Local Act determined to widen the highway by setting back the kerbstone and throwing the causeway into the road. On the edge of the causeway nearest the road there was a telegraph pole which it was necessary to remove and the Corporation wrote to the Post Office authorities asking them to set back the pole to the improved street line.

The Post Office accordingly had the pole removed and the hole filled in; and shortly afterwards the Corporation threw the road open for traffic. A few days later a steam wagon belonging to the plaintiff was passing along the highway when one of its wheels sank into the hole and the wagon was considerably damaged. In an action brought by the plaintiff against the Corporation and the Post Office authorities to recover damages for injury to his wagon caused by the negligence of the defendants:—

Held that the defendants were liable, the Corporation upon the ground that they were altering the character of part of an old road (i.e.) in effect making a new road, and their duty was to so make it that when they threw it open for public use it should be reasonably safe for the purposes for which it was intended to be used; the Post Office authorities upon the ground that having done, perhaps voluntarily, a piece of work, they did it negligently.

Held further, that the Telegraph Act, 1863, did not take away any responsibility which the Corporation might be under independently of it

Thompson v. Bradford Corporation. 77

Suit—*Notice of*—see *Notice by dismissed servants*—see *Master and Servant*.

Sunshade—*Over a public drain*—*Drain and the sunshade within private limits*—*Power of the Corporation to remove the same*—*Question whether sunshade interferes or not with the work of cleaning, &c., immaterial*.

In a suit brought by the plaintiff for a declaration that the land in front of his house through which a public drain passed was his land and for an injunction restraining the Corporation from interfering with a sunshade in front of his house which overhung the drain, it was held that the President had ample powers to call upon an owner of a building in a public street to remove a sunshade in front of his house which overhangs a public drain.

Held also that a public drain is part of a public street and any projection over the drain space is a projection in a public street.

Held further that the fact that the projection does not interfere with the proper cleaning and maintaining the drain as a drain is immaterial so long as it is a projection in a public street.

The Corporation of Madras v. Mohanlal Sowcar 49

Tolls—*Nonpayment of*,—*Prosecution*—*Maintainability*—*Madras District Municipalities Act, Secs. 92, 103, 269*.

The amount of tollgate list due from the farmer of a toll-gate is not an amount due on account of any tax within the meaning of Sec. 103 of the District Municipalities Act; nor does the amount fall under any of the headings dealt with in Sec. 269 of the Act. The payment is due under a contract under Sec. 92 of the District Municipalities Act and as such is not covered by the provisions of Sec. 269 of the Act.

A prosecution for failure to pay the amounts due under the contract is, therefore, illegal.

Mahomed Ibrahim Sahib v. Municipality of Anakapalli 87

Water Supply—*For domestic purposes—Trade purposes—Public House—Catering Business—Water used for the preparation of luncheons—Metropolitan Water Board (charges) Act, 1907 (7 Geo. 7, c. clxxi), Secs. 3, 25.*

Water supplied under the Metropolitan Water Board (charges) Act, 1907, to the licensee of a public house where luncheons were served was used for cooking the food and washing up the plates and dishes :

Held that the water was used for domestic purposes within the meaning of Sec. 25 of the Act and must be charged for on that footing.

Per Lord Dunedin ; The statement of Buckley, L. J. that the test of ' domestic purposes ' is not whether the water is consumed or used in the course of the trade but whether the user of the water is in its nature domestic, approved.

Metropolitan Water Board v. Avery,— 51

